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ORIGINAL ARTICLES.

TUBERCULOSIS AND THE LIFE AND WORK OF SIR WILLIAM OSLER.[1]

A TRIBUTE.[2]

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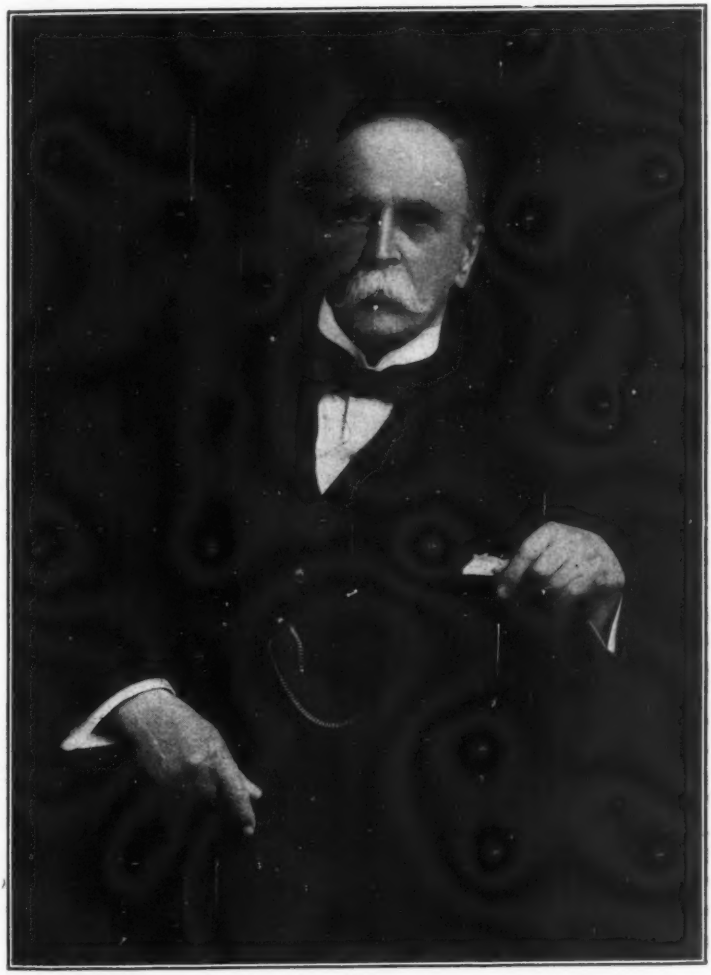
The first physician to receive the distinction of a unanimous election as Honorary Vice-President of the American National Tuberculosis Association was our late and much regretted Sir William Osler, who, when at Baltimore, was one of the prime movers in its formation. His interest in the tuberculosis problem in its social as well as its medical aspects, has been unabated. He was closely identified with the anti-tuberculosis movement in America as well as in England, and his counsel was sought as an expert in all that appertains to this most widespread of diseases. The accompanying bibliography comprises some fifty of his most important contributions on the subject of tuberculosis. To Dr. Osler is due the formation of the Laennec Society for the study of tuberculosis, which is a part of Johns Hopkins Medical School, and in 1900 he established the first social service division in connection with the tuberculosis work of the Johns Hopkins Hospital.

[1] Readers of this journal will welcome this tribute to one we have all respected and loved and followed as a trusted leader. Sir William Osler was ever ready to further research and all scientifically directed enterprises making for the prevention and arrest of tuberculosis. To those responsible for the conduct of this journal he extended much valued sympathy and support. Through the courtesy of the Editor of the *Lancet* we are enabled to reproduce the portrait which appeared in the issue for January 3, 1920.—Editor, *B. J. T.*

[2] From the advance sheets of Dr. Knopf's "The History of the Anti-Tuberculosis Movement in the United States."

This universally beloved physician was justly claimed by three countries—Canada, the United States, and England. He was born in Bondhead, Ontario, on July 12, 1849, and came from a family of culture, his father being the Rev. F. L., and his mother Ellen Frere (Pickton) Osler. He started out in life with high ambitions and noble aims, graduating from Trinity College, Toronto, in 1868, and taking his medical degree at the McGill University, Montreal, in 1872. He went abroad for a post-graduate course, studying at London, Berlin, and Vienna. On his return from abroad in 1874 he was made professor of the institute of medicine of McGill University, where he remained until 1884, and then accepted a call as professor of clinical medicine of the University of Pennsylvania. With the foundation of the Medical Department of Johns Hopkins University in 1889, Dr. Osler became professor of theory and practice of medicine of that institution, and at the same time physician in chief of Johns Hopkins Hospital, where he remained until the spring of 1905. In the fall of 1904 he had received and accepted a call from Oxford to become regius professor of that world-renowned university. In reply to the author's congratulation on his receiving this great distinction, he wrote: "Naturally, I am very loath to leave America, where I have been so well treated and where I have so many warm friends, but it really is an act of self-preservation. I could not possibly stand for very long the high pressure of my present life. The position is almost purely academic, and I will have an abundance of time for my literary work."

When Osler left America a dinner was given to him, the memory of which will be for ever cherished by those who were present. He was eulogized as a teacher, clinician, consultant, and author by such men as Tyson, Shepard, Wilson, Welch, Jacobi, and Weir Mitchell. Osler's reply was full of expressions of gratitude and appreciation. Among other things he said: "Why so much happiness has come to me I know not. But this I know, that I have not deserved more than others, and yet a very rich abundance of it has been vouchsafed to me. I have been singularly happy in my friends, and for that I say 'God be praised.' I have had exceptional happiness in the profession of my choice, and I owe all of this to you. . . . I have been happy, too, in the public among whom I worked—happy in my own land in Canada, happy here among you in the country of my adoption." His venerable mother and his wife were seated in one of the boxes, and turning a grateful glance upward, he said: "Of the greatest of all happiness I cannot speak—of my home. Many of you know it, and that is enough." . . . "I have had three personal ideals. One, to do the day's work well and not to bother about to-morrow. The second ideal has been to act the Golden Rule, as far as in me lay, towards my professional brethren and towards the patients committed to my care. The third



SIR WILLIAM OSLER, BART., M.D., F.R.S.,
Late Regius Professor of Medicine in the University of Oxford.

has been to cultivate such a measure of equanimity as would enable me to bear success with humility, the affection of my friends without pride, and to be ready when the day of sorrow and grief came to meet it with the courage befitting a man."

The honours bestowed upon Osler are almost too numerous to recount. He received the honorary degree of LL.D. from McGill University in 1895, from the Universities of Aberdeen and Edinburgh in 1898, from the University of Toronto in 1899, from Yale University in 1901, from Harvard University 1904, and from Johns Hopkins 1905. The degree of Doctor of Civil Law was conferred by Trinity University, Toronto, in 1902, and the University of Durham in 1913; the degree of Doctor of Science from Oxford University in 1904, Liverpool University in 1910, and the University of Dublin in 1912. He was made a fellow of the Royal College of Physicians in 1883, and a fellow of the Royal Society in 1898. In 1911 Osler was created a Baronet of the United Kingdom by King George V. In 1918 Sir William was made President of the British Classical Association, a rare honour indeed to be bestowed upon one whose training had been that of a physician purely and simply.

Osler's interest in America, in its medical institutions, and in his countless friends and pupils was genuine and lasting until the end. His work in Oxford equalled his achievements in Montreal, Philadelphia, and Baltimore. In answer to an inquiry prior to the publication of an article on "The Tuberculosis Situation after the World War," Sir William wrote me under date of May 26, 1919: "All goes well here and I hope we will get the tuberculosis problem settled erelong on national lines." During the war he worked for the health of the English and Allied armies. The death of his only son, Revere, who made the supreme sacrifice in the world war, was a terrible blow to this great and good man, but he bore up under it bravely. In reply to a letter of condolence from the author, after expressing his thanks with his usual warm-heartedness, Sir William merely added, "It has, of course, been a pretty hard business." Then, forgetful of his own sorrow, he went on to speak of our duties as physicians in the world war. He kept on working for the soldiers and with the soldiers. He talked to them on subjects of hygiene, how to preserve their health and to prevent tuberculosis.

The July number of 1919 of "Johns Hopkins Hospital Bulletin" was entirely devoted to tributes to Osler; Thomas, Barker, Councilman, MacCallum, Thayer, Brown, McCrae, Hamman, Futcher, Jacobs, Brush, Woods, Chatard, Noyes, Hurd, Kelly, and Boggs, who had been either Osler's co-workers or pupils, related their personal experiences showing the wide spheres of his activities as a teacher, sanitarian, physician, citizen, scholar, and lover of books. The articles which are

of particular interest to us as students of tuberculosis were those of Louis Hamman, who wrote on "Osler and the Tuberculosis Work of the Hospital," and of Henry Barton Jacobs, on "Osler as a Citizen and His Relation to the Tuberculosis Crusade in Maryland."

In November, 1919, Osler contracted pneumonia, but he himself hoped for an early recovery, and on Christmas day he sent a typical cheerful telegram to Johns Hopkins Hospital, announcing that he was making a good fight; four days later he died. Perhaps he only sent that message to give Christmas cheer to his many friends on this side of the Atlantic. He must have realized the seriousness of his condition, for after his death the following note, dated December 23, 1919, was found among his effects: "Dear friends, the harbour is nearly reached, after a splendid voyage with such companions all the way; and my son waiting for me." How the soul of this great man is revealed in these simple words! Cheerfulness and an unbounded capacity for work, a devotion to the highest ideals for medicine and humanity, a marvellous scholarship, loyalty to his friends and kindliness to the humblest of the humble, were the outstanding characteristics of Sir William Osler. His lifelong friend, Professor William H. Welch, of Baltimore, well said of him: "To Osler nothing human was foreign. His home both in Baltimore and Oxford was a centre of hospitality." Those who had the rare privilege to walk with Professor Osler through the medical wards, or who had the good fortune to have been present at some of his receptions to students will never forget the human side of his character.

Osler was devoted to his pupils, but he was also devoted to his teachers, and the veneration and enthusiasm he expressed when he spoke of his own masters and the masters of us all was an inspiration that not only stimulated interest in historical medicine, but aroused gratitude for the inheritance which the teachers of past generations have left us. On October 5, 1905, he took the American delegation, which had attended the Fifth International Tuberculosis Congress in Paris, to the cemetery of Mont Parnasse to deposit a wreath on the tomb of Louis, the French physician, at whose feet so many American physicians of the past generation had sat. It was a touching tribute, and gave the younger men a lesson in gratitude to our teachers.

Such a biographical sketch as this must necessarily be incomplete and inadequate to one of our greatest physicians of the Anglo-Saxon race of the present day, but we are considering mainly Osler's activities as an anti-tuberculosis worker. As such he instructed thousands of students by word of mouth and by his writings on early diagnosis, practical prophylaxis, and rational treatment. In a lecture he delivered soon after his arrival in England, he said: "Probably 90 per cent. of mankind has latent tuberculosis, and if I had an instrument here with

which I could look into the chest and abdomen of each of you I would probably find somewhere a small area of the disease. So widespread is the germ that practically all humans, by the time they become adult, harbour the bacillus of the disease. But we do not die, because we are not guinea-pigs and rabbits. We have attained a certain immunity. But the germ is in us, though negative, and with all of us there is the possibility of slipping into the dangerous state. But when workers have living wages, when the house becomes the home, and the nation spends on food what it now spends on drink, then there will be millions instead of thousands with practically continuous immunity. For the enemy has been tracked to its stronghold, which is defended by three allies—poverty, bad housing, and drink." He looked upon tuberculosis as a disease of the masses, and particularly of those of little or no means, and we know that he induced many of his wealthy friends and patients to consecrate some of their fortunes to the relief of the consumptive poor.

Characteristic of William Osler and his labours are the words which grace the photograph he presented to those who bade him farewell on May 2, 1905, when he was about to leave for Oxford. They were the immortal words of Abou ben Adhem, "Write me as one that loves his fellow-man."

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PULMONARY TUBERCULOSIS *VERSUS* CONSUMPTION.

By HAROLD BATTY SHAW,

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One of the most serious charges that can be levied against the medical profession is that the solution of many of its problems depends upon the point of view, and the simile has been used that this, that, or the other medical problem reveals difficulties according to the knowledge we bring to bear in each case. It is a very picturesque simile; it gives many an opportunity to those who wish to throw stones at other people's glass houses, to do so. There must, however, be a fallacy somewhere which makes it possible for any one particular problem in medicine to be solved in diametrically opposite ways, and that fallacy turns upon the defects in our knowledge. Let us take, for instance, the problem of what it is which constitutes the changes in the lungs which we call *pulmonary tuberculosis*, and what we call *consumption*. It is not very many years ago when the proposal was made that we should get rid of the inexactness implied when we spoke of consumption and phthisis, and instead should adopt the precise nomenclature—pulmonary tuberculosis. It is quite clear that this laudable decision has been carried too far. Pulmonary tuberculosis of a pure type is not synonymous with consumption. Pure pulmonary tuberculosis presents one of the three following pictures—(i.) the lung becomes fibroid and contracts, or (ii.) the lung is sown with numerous miliary tubercles, or (iii.) it is converted into a dense, hard mass of tuberculous granulomata, varying in diameter from that of a pea to that of a half-crown. The formation of cavities and the occurrence of suppuration, I contend, are not features of pure pulmonary tuberculosis.

It was once my experience to conduct the post-mortem examination of a woman whose lungs were the seat of widespread miliary tuberculosis. Miliary tuberculosis was found elsewhere in the body. The usual search was made to try and establish a possible "earliest" focus of disease. During this investigation the womb was noticed to be a little enlarged; the cut surfaces of the organ revealed no cavitation, but the appearance was abnormal, and it was decided to stain sections for organisms *in situ*. The discovery was remarkable; for the sections stained by the Ziehl-Neelsen method were, to the naked eye, obviously and deeply tinged with fuchsin. On microscopic examination the

tissues of the uterine wall were found to be closely sown with myriads of tubercle bacilli, reaching from the internal to the external surfaces of the organ. *Suppuration and abscess cavity-formation were entirely absent; it was a case of pure tuberculous metritis.*

About a year ago I saw a man with Dr. Joseph Harvey, of Merton Park, who appeared to have very severe lumbago. His temperature was found to be raised, and ultimately a large left peri-renal abscess was evacuated. After many weeks the wound healed and the temperature fell; gradually the man developed a fresh attack of fever and signs of consolidation appeared at the base of the right lung; the temperature gradually fell, though the lung signs persisted. The man was allowed to resume his duties, but suddenly developed severe hæmoptysis, and died shortly afterwards. It was found at the post-mortem examination that there was a large cavity at the base of the right lung containing much pus and an aneurism as large as a cherry, which, bursting into the cavity, was responsible for the hæmoptysis. Tubercle bacilli were never discovered, though looked for, in the pus discharged from his peri-renal abscess, or in the sputum coughed up. At the post-mortem no tuberculous lesions were visible to the naked eye anywhere in the body, and tubercle bacilli and giant cells could not be recognised microscopically in the walls of the cavity. This man had, therefore, copious hæmoptysis from an aneurism which had burst into a pulmonary cavity, the whole pathological process being independent of infection by the tubercle bacillus. *Aneurism-formation in a cavity is not a function of tuberculous infection, but of pyogenic infection.*

To complete my picture, I would say that our cases of pulmonary tuberculosis appear to go to pieces badly when catarrhal bronchitis is added to the picture, and we know that the so-called catarrhal bronchitis is dependent on a number of organisms which are essentially pyogenic. Bacteriologists frankly admit that the tubercle bacillus is not a pyogenic organism. Approaching the problem, therefore, of the differentiation of pure pulmonary tuberculosis from consumption, bacteriological and pathological findings clearly establish that the processes are not identical. From whichever way we view this problem, this truth holds good.

It seems, therefore, to me that the attack upon these diseases should be twofold. Our remedies should be directed to prevent the spread of pure and uncomplicated pulmonary tuberculosis. We presume that this is best done by an open-air life and efficient feeding. These two details seem so likely to be of service that it is almost ridiculous to question their efficacy, and yet how remarkable it is that we find cured tuberculous lesions in those who have never been fed well, and have never lived under hygienic surroundings. Of this there can be no question. There must be some other process of salvation at

work. This process we speak of as resistance. It has been shown, experimentally and practically, that such resistance in the case of typhoid infection can be increased by prophylactic vaccination. It is reasonable to believe that prophylactic vaccination with tuberculin of our young children may, in time, be proved to prevent the spread of pure tuberculosis. If consumption is due, not only to the presence of a tuberculous infection in the lung, but to a secondary destructive suppuration of the lung, then, to prevent consumption, we should prophylactically vaccinate people against infection by those denizens of the respiratory tract which cause suppuration. It is possible that these latter infections would be favourably influenced by antiseptic inhalations. Seeing how favourably influenced suppurative lesions are by exposure of wounds, etc., to the open air, and by placing the patients themselves in the open air, it is reasonable to think that life in the open in a dry, warm country will lead to the loss of purulent expectoration and of temperature, and give tubercle bacilli an opportunity to show their characteristic reaction, a benign one, in producing fibrosis and contraction of the affected lung.

ON MUSCULAR CHANGES OCCURRING IN PULMONARY TUBERCULOSIS.

By JOHN CRAIG-MACGOWN,

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Nothing is more remarkable in the history of medicine than the reluctance to accept new discoveries or approve new applications of known facts. Ignorance and conservatism have too often compelled the discoverers of fresh truths to fight for their recognition, with the result that progress has been hindered. The research work of Canon, Minor, Crile, Fischer, and Pottenger has explained the true significance of certain muscular changes in pulmonary tuberculosis and definitely proved their value in diagnosis. Many observers had been impressed with the fact that in the early stages of this disease a tightening and increased tonus had been observed in such muscles as the trapezius, pectoralis major, sternomastoid, and scaleni. In the later stages a degeneration and thinning of these same structures and the subcutaneous tissue overlying them had been noted. It was not until 1909, however, that Pottenger of California drew attention to these changes and offered

an explanation of their cause which has now been generally accepted. Brauer, in 1912, in his "Beiträge zur Tuberculose" confirmed Pottenger's contentions, and assigned to them a definite value in diagnosis.

The Cause of Muscular Changes in Tuberculosis.

Various observers have definitely stated that the changes occurring in the muscles and other skeletal structures in cases of tuberculosis were due to reflex action, and arise from the endings of the sympathetics in the pulmonary tissue being irritated by tuberculo-toxins. It may be stated as an axiom that "every important internal viscus is connected through the central nervous system by afferent sympathetic and efferent spinal nerves with definite skeletal structures, which if the viscus is inflamed show reflex sensory and motor activity; and if the inflammation becomes chronic, trophic changes are manifested."

Many authorities have stated that the lung has no nerves of sensation, but the work of Head has shown that this is not the case. This observer has demonstrated the fact that while different segments of the cord receive impulses from the lung in varying degree, the segments which are chiefly affected during intra-pulmonary inflammatory states are the third and fourth cervical segments. Wichmann prepared a table showing the various muscles and their segmental enervation, and reference to it shows that the principal muscles which take their nerve supply from the third and fourth cervical segments are the sterno-mastoid, the scaleni, trapezius (upper border), and the diaphragm (phrenic nerve). These muscles, along with the upper fibres of the pectoralis major, the subcutaneous tissue and skin overlying them, are the structures which show the changes already mentioned, when there is any intra-pulmonary inflammatory condition existing. It is well to bear in mind that these changes—namely, increased tonus of the muscles during acute inflammation, and degenerative changes if it becomes chronic—take place irrespective of the cause. In acute pleurisy a tense state of the intercostal muscles is noticed, and in subjects who have had repeated attacks degenerative changes can be seen in the same muscles.

The lungs are enervated by both branches of the involuntary system (sympathetics and vagus). The vagus supplies the mucous glands and the muscles of the bronchi, and when stimulated produces increased secretion and spasm of these muscles (asthma). The sympathetic fibres which supply the lung come from the upper six segments of the cord which proceed chiefly from the upper three or four dorsal ganglia, while the vagus fibres supplying it come from the bulbar roots. The action of the sympathetics is antagonistic to that of the vagus, and stimulation of them causes diminished bronchial secretion and relaxation of the bronchial musculature. Probably the best known example of muscular

spasm due to visceral inflammation is in the case of appendicitis, when marked spasm of the abdominal muscles is found. In order to make my meaning clear it may be well to take a concrete example.

In a subject suffering from an acute tuberculous lesion of the right apex the sympathetic fibres supplying that portion of the lung are irritated. These fibres convey afferent impulses to the ganglia lying outside the cord with which they are connected. From these ganglia through the rami communicantes the impulses are conveyed to the spinal cord (in this case the third and fourth cervical segments). The cells in the cord, being disturbed, pass on the impulses to other cells lying adjacent to them. These cells give rise to fibres which convey impulses to the periphery, where sensory and motor disturbances take place so long as the inflammation is acute. Later on, if the inflammation has existed for a considerable period, trophic changes in the soft tissues take place and the muscle fibres degenerate. In the case we have taken as an example the sensory disturbances would be expressed as pain in the shoulder and under the clavicle, this being a fairly common symptom in early tuberculosis, which is frequently mistaken for rheumatism or neuritis. The motor reflex would show itself as an increased spasm of the muscles covering the right apex which have been already mentioned. Another result of this reflex is a decreased movement of the right side of the diaphragm through the irritation of the right phrenic which comes from the third and fourth cervical segments. The muscles which show increased spasm best are the trapezius (upper fibres), which becomes tense to the touch and has its normal convexity increased, while the pectoralis major (upper fibres) can be seen to be bunched up below the middle of the clavicle, and feels tense and firm to palpation. The most important motor reflex, and one which has a far-reaching influence on the general health, is the diminished movement of the diaphragm. Wenkelbach states that it is followed by dizziness, faintness, loss of energy, staying power, and other symptoms of the cardio-neurotic group.

In acute pleurisy the lower intercostal muscles and the costal portion of the diaphragm are involved in motor reflex changes resulting in a diminished movement of the diaphragm, and if there are repeated attacks these muscles show trophic changes. If the lower intercostal muscles are carefully examined in subjects who have had repeated attacks of pleurisy it will be noticed that they are thinned, and have a stringy feel on palpation. Thus we see that the movement of the diaphragm is affected as a result of inflammatory conditions of the lungs through the phrenics, causing motor spasm of its central portion, and in pleurisy through the intercostals, giving rise to the same condition of the costal portion. Trophic degeneration of the muscles and subcutaneous tissue when the disease becomes chronic takes place

in the same area and structures in which motor spasm is seen, while the disease is acute. These changes are seen best in the muscles supplied by the third and fourth cervical segments—that is to say, in an area bounded anteriorly by the second rib and posteriorly as far down as the spine of the scapula; also in the skin and subcutaneous tissue in the same area, and this is a useful point in the differential diagnosis between wasting caused by disuse and that caused by trophic reflexes, as in the former the subcutaneous tissue is never affected. The first change which takes place in reflex muscular degeneration is wasting of the inter-fascicular connective tissue, and later a true myositic fibrosis takes place.

Trophic Changes in the Muscles and Subcutaneous Tissue.

If the tuberculous condition becomes chronic the muscles, subcutaneous tissue, and skin which are in the area of the reflex show degenerative changes. This degeneration or wasting is often visible to the eye, but can be made out best by palpation. The belly of the muscles (trapezius, sterno-mastoid, scaleni, and upper fibres of the pectoralis major) is thinner and smaller than the normal, and has a boggy, inelastic feel. If the tips of the fingers are run over the surface of these muscles one feels they have lost their smoothness, and are stringy. This stringiness is due to the fact that there is a wasting of the inter-fascicular tissue. The wasting of the subcutaneous tissue is best seen in the supra- and infra-clavicular notches and in the supra-spinous fossa. If one picks up the skin and subcutaneous tissue between the finger on the side on which there is apparently atrophy and compare it with the opposite side, it will be found that it is much thinner and has lost its normal elasticity. Where muscles atrophy from disuse it will be found that the subcutaneous tissue is not affected, this constituting a useful point in differential diagnosis. An important point to notice is that the skin areas and muscle areas which show reflex changes from the lung are not co-extensive. The nutrition of the skin depends upon the sensory nerves, while both sensory and motor nerves enter into the nutritional control of the muscles and other skeletal structures.

The viscerotrophic changes are much wider in extent of tissues involved than the motor and sensory reflexes. When trophic changes take place in the skin it is frequently noticed that it has a different pigmentation to the normal skin. Pottenger draws attention to a degeneration of the skin and subcutaneous tissue in the interscapular region from the second to the fourth or fifth dorsal spines. This he terms the "hilus saucer of degeneration." This is a valuable diagnostic sign, especially in children, and generally indicates the presence of marked bronchial gland involvement at some period.

In children in whom a tuberculous involvement of the bronchial glands is suspected (a very common occurrence), if one finds this degeneration in the area named, combined with dulness in percussion extending out to the scapula on one or both sides, it constitutes strong corroborative evidence. The fact that these viscerotrophic changes are occasionally found to be present on the anterior area of the chest, and not on the posterior or *vice versa*, demonstrates the fact that they are supplied by separate groups of nerve fibres. If one finds these trophic changes in the area of the chest bounded anteriorly by the upper border of the second rib and posteriorly by the spine of the scapula, one may conclude they are of pulmonary origin, while if similar changes are found in the skeletal structures below that area they are the result of inflammatory conditions of the pleura.

Diagnostic Value of the Reflexes.

Before we can admit the above-mentioned changes as diagnostic points, it is essential that we must make certain that they are true trophic changes and not the result of general emaciation or occupational influences. In people who are not called upon to make any unusual use of their arms in their vocation it will be found that they have a degeneration of the muscles of the shoulder girdle, and a consequent lengthening of the muscles and drooping of the shoulders on the side of the body they make most use of. This condition is very apt to mislead one and must always be allowed for. This lengthening of the muscles is usually best seen in the upper border of the trapezius, and results in a lowering of the acromion process which carries down the pectoral mass of muscles attached to it. *It will, however, be found that there is no degeneration or wasting of the subcutaneous tissues in this condition.* The sterno-mastoid is also free from occupational influences, and is useful in differential diagnosis, as if found either to be in a condition of increased tonus (or spasm) or degenerated, one can safely conclude these changes to be the result of reflex influences.

On the other hand, those who are employed in strenuous manual labour have a certain hypertrophy of the above-named muscles. In these people it is often difficult to determine visceromotor changes. However, if one finds that the shoulder muscles in these people show an increased spasm or tenseness, and at the same time have a diminished movement of the diaphragm (determined by "tidal" percussion), it may be taken for granted that the cause is due to reflex motor influences. It will now be apparent how valuable these reflex visceral changes are in diagnosis and how they may influence the physical findings.

If the muscles around the shoulder girdle show an increased tonus after eliminating occupational influences, and there is pain in the tissues in the same region, it is evidence of the presence of some acute intra-

pulmonary inflammatory condition, tuberculous or otherwise. If, on the other hand, there is a definite degeneration of the muscles, subcutaneous tissue, and skin we may conclude that some chronic inflammatory condition of the lung or lungs is present, most probably tubercular. Again, if an increased tonus of the degenerated muscles is found, this almost certainly indicates a renewed activity of the disease in an old quiescent focus. Increased spasm of the neck and chest muscles is constantly present in early active tuberculosis. St. Galecki found it present in 93 per cent. of early cases examined.

Influence of Reflex Changes on Percussion.

Hitherto too much stress has been laid upon the influence that the infiltration of the lung has upon the percussion note to the exclusion of the other factors which go to produce it. The percussion note over a lung is the result of the condition of the lung tissue itself, the surrounding structures, the elasticity or otherwise of the bony thorax, the amount of soft tissues covering it, and the condition of the muscles. It can readily be seen that if one is percussing over degenerated muscles and subcutaneous tissue the pitch of the note will be considerably lowered, in some cases to such an extent that the note over the normal lung and soft tissues and the lung affected may be the same. This is very apt to mislead. The degeneration of the muscles and subcutaneous tissues, however, should guide and prevent mistakes being made.

Another case in which these reflex changes are of value in diagnosis may be stated as follows: Let us suppose that in the right lung there is a fairly extensive fibrosis, with compensatory emphysema in the left lung. If there is an extension of the disease to the left lung in its early stages it may easily be overlooked if we depend upon percussion and auscultation, as a slight infiltration in an emphysematous lung would raise the pitch of the note very little, so that the examiner may think he is simply dealing with an emphysematous lung. Here, again, the reflex signs come to our aid, and if the disease is active the visceromotor signs will assist, as the muscles will show an increased tonus or spasm, indicating an acute intra-pulmonary inflammatory condition. These conditions of degeneration and increased tonus of the muscles and subcutaneous tissue also greatly modify the respiratory sound as elicited by auscultation.

Space does not permit of discussion regarding the vagus reflexes which originate in the lung; but there can be no doubt that the recognition and proper interpretation of these reflex signs will prove extremely helpful in diagnosis, and not only prevent mistakes being made, but also enable a more reliable diagnosis to be made in cases which have hitherto proved puzzling.

These changes, I grant, are not apparent until looked for carefully.

So accustomed have we become to depend on our findings from percussion and auscultation that we are often blind to these changes, which hitherto had been attributed to general emaciation. However, if we carefully look for them they can be found, and such changes as increased tonus of the muscles are found to be associated with active disease, the presence of which is verified by toxæmic symptoms, and in some cases the presence of fine crepitations. Flaccid, degenerated muscles will usually be found to be associated with a chronic quiescent lesion.

There has been too great a tendency in modern medicine to underrate the value of theorizing as an aid to the eliciting of facts, with a definite basis of demonstrable cause and result. In this article I have confined myself to the assistance which visceroreflex changes give in the diagnosis of pulmonary tuberculosis, but the further application of known physiological facts pertaining to visceral neurology will greatly simplify clinical diagnosis. There is a wide field of research waiting to be explored in the action of the endocrine glands (such as the adrenals) on the visceral nerves and their influence in prolonging symptoms in internal visceral diseases.

THE EPIDEMIOLOGY OF PHTHISIS.

By WILLIAM GORDON,

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It is time that attention was again given to the climatology of tuberculosis. The comparative failure of English phthisis sanatoria has been a heavy price to pay for its neglect. Dr. Brownlee's reports should arouse fresh interest. As Director of the Statistical Department of the Medical Research Committee, he has done well to throw his energy into this forgotten subject,[1] and it is to be hoped that he will continue his investigations. Large sums of public money will presently—and certainly most properly—be devoted to the erection of sanatoria for our phthisical sailors and soldiers, and it will be calamitous if men who have sacrificed health in the service of the Empire lose any of their chance of recovery through want of knowledge on the part of the responsible medical authorities. I would therefore recommend

[1] "An Investigation into the Epidemiology of Phthisis in Great Britain and Ireland," Medical Research Committee, Parts I. and II., 1918; Part III., 1920. London: H.M. Stationery Office, Imperial House, Kingsway, W.C.

all concerned to read carefully Dr. Brownlee's confirmation of the work done some years ago in Devonshire on the influence of rain-bearing winds on phthisis-prevalence, since these winds have also been shown to influence the course of the disease.

Dr. Brownlee's Reports.—The new method which Dr. Brownlee has introduced of investigating phthisis-prevalence at different age-periods is one which may well prove valuable. We cannot, however, accept his contention that there are two or three *age-selective* types of human tubercle; such types have no recognized bacteriological analogies, and, as he admits, are both clinically and pathologically unknown; moreover, the female age-curves do not bear out that view.[1] The suggestion, that the decline of phthisis-prevalence is due to the inherent biological properties of the disease, Dr. Brownlee has himself ably disproved. As to the effects of strong, prevalent, rain-bearing winds and the prevalence of phthisis, his careful confirmation of the proof, in Devonshire, of the powerful influence of rainy winds in promoting phthisis-prevalence amongst populations exposed to them, is a far-reaching piece of work. No one will suppose that such an influence is peculiar to a single county; therefore his confirmation opens up the entire subject of the influence of such winds wherever they make themselves felt.

Rain-bearing Winds and Phthisis.—Much has already been done on this subject; in fact, the climatology of phthisis-prevalence from the new standpoint of their influence has nearly been completed. The following may now reasonably be regarded as established:

1. *Strong, Prevalent, Rain-bearing Winds in Devon.*—That, in Devon, populations exposed to strong, prevalent, rain-bearing winds suffer considerably more from phthisis than populations sheltered from them. This is the initial finding which Dr. Brownlee has confirmed.[2]

2. *Strong, Prevalent, Rain-bearing Winds Elsewhere.*—That, throughout the world, wherever statistics worth examining exist, the same influence of these winds is traceable, *and no exceptions have been discovered.*[3]

3. *The Influence of these Winds on the Course of Phthisis.*—That these winds also adversely affect the course of the developed disease in patients exposed to them.[4] I have no doubt that much of the disappointment felt with the results of sanatorium treatment of phthisis in this country is due to the ill-chosen sites of some of our sanatoria. Certain of the Germans seem to have known better—Görbersdorf Brehmer's original sanatorium, and Nordrach, Walther's place in the Black Forest, were situated in very sheltered valleys, where their success seems well established. Others, however, obviously did not;

[1] See *British Medical Journal*, May 1, 1920.
[2] See "The Influence of Strong, Prevalent, Rain-bearing Winds on the Prevalence of Phthisis," Chaps. I. to V. London: Lewis, 1910.
[3] *Ibid.*, Chap. VI.
[4] *British Medical Journal*, February 10 and April 6, 1912.

thus Falkenstein, in the Taunus, on an exposed site facing full south-west, was a failure, and has been closed.

4. *Their Influence on Bovine Tuberculosis.*—That these winds influence the prevalence of tuberculosis in cattle just as they influence it in human beings.[1] The importance of this fact from a public-health point of view would appear considerable. Yet it has received no attention!

5. *Altitude and Phthisis-Prevalence.*—That, when the influence of rain-bearing winds has been eliminated, by considering only populations in shelter from them, the unexplained contradictions regarding the influence of altitude on phthisis-prevalence disappear, and altitude is seen, *per se*, to exercise no appreciable influence.[2] This, however, does not disprove the value of certain high altitudes in the *treatment* of the disease.

6. *Subsoil and Phthisis-Prevalence.*—That, when the influence of rain-bearing winds has been eliminated, the unexplained contradictions regarding the influence of geological formation on phthisis-prevalence disappear, and it may now be taken as practically proved that geological formation does influence the prevalence of phthisis, although less powerfully than rain-bearing wind.[3] I say "practically proved" because, recognizing the effect of rainy winds, I do not regard the proof as absolutely complete until some larger populations have been dealt with in shelter from them. From any other standpoint the proof is complete.

7. *Occupation and Density of Population and Phthisis-Prevalence.*—That the influences of occupation and density of population on phthisis-prevalence are modified by co-existing climatological influences such as rainy wind.[4]

8. *The Principle of the Approximate Isolation of Influences.*—That, if climatology is to be raised out of the chaos of mere surmise, in which it has hitherto been involved, and if it is to be placed on a solid scientific basis, a principle which I have called "the principle of the approximate isolation of influences"[5] must be recognized and applied. By such "approximate isolation" I mean the enumeration of all possible appreciable conflicting influences, and their successive elimination from the problem so far as that is possible. The application of this principle is neither easy nor brief, but it is feasible and effective.

[1] See *British Medical Journal*, March 4, 1911.
[2] "The Place of Climatology in Medicine," Lecture II. London, 1913.
[3] Consult Proceedings of the Royal Society of Medicine, 1915, Vol. IX.; Balneological and Climatological Section, pp. 1-20. Also full tables deposited in the Library of the Society.
[4] *Practitioner*, p. 7. January, 1913.
[5] See "Influence of Strong, Prevalent, Rain-bearing Winds on the Prevalence of Phthisis," p. 11.

THE VON PIRQUET REACTION IN PULMONARY TUBERCULOSIS, WITH NOTES OF A FEW CASES.

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The investigations referred to in this paper were carried out with the object of estimating the value of the Von Pirquet reaction as a diagnostic and prognostic agent in cases of pulmonary tuberculosis. Up to the present 100 cases have been tested.

The Technique Employed.

The extensor aspect of the forearm was swabbed with methylated spirit and then thoroughly dried. Two small circular scarified areas were made alongside each other by means of a blunt-pointed scarifier.[1] By gently rotating the instrument two areas were produced almost equal in area and in depth. Scarification was continued until blood was about to be drawn. A drop of Koch's old tuberculin, undiluted, was then placed on the upper or proximal area and left in position for from five to seven minutes, no further scarification being performed meantime. The excess of tuberculin was thereafter removed. No fluid of any kind was applied to the other area, the control. The patient was warned not to wash the arm or allow it to become damp during the four or five days subsequent to the performance of the test. No dressing was applied. If this technique is strictly followed, adults will not complain of discomfort, and in children trouble is rarely met with. Of the 100 cases I have treated, one child fainted and two others became pale and complained of feeling sick during the performance of the test. The remaining patients were not inconvenienced.

Classification of Results.

In the Von Pirquet test, as in most tests, it is impossible to exclude the personal element. Certain writers have described their reactions as negative, doubtful, and positive, but it is more satisfactory to divide them into two groups: (*a*) negative and (*b*) positive. This classification has been adopted in the present series of cases. The detection by inspection and palpation of any difference, slight or marked, between the two areas during the twelve to seventy-two hours following the tests constituted a positive result. A few cases exhibited a thickened area with

[1] The scarifier was obtained from Messrs. Allen and Hanbury, Ltd.

an evanescent copper tint, and others an erythema without any thickening. In the more positive cases a red œdematous area resulted, the longest diameter of which ranged from 1·5 to 3 cm. Occasionally this area was surmounted near its centre by a vesicle. Some of the reactions disappeared completely within seventy-two hours, but others persisted for five or six days, or were still represented by staining after the lapse of weeks.

A Consideration of Results.

The results obtained in adults—*i.e.*, persons of fourteen years of age or over—may first be considered. Of the 100 cases investigated, 42 were adults.

My cases show, as has been the case with other observers, that the Von Pirquet test may be negative in advanced cases of tuberculosis of the lungs. By an advanced case is meant one which is likely to die, say, within some months. Among my 42 adults there was only one who could be so described. He was "resting and febrile," had marked physical signs over the lungs, and abundant tubercle bacilli in the sputum. The Von Pirquet was negative. If it be assumed that a positive Von Pirquet reaction indicates the presence of tubercle immune bodies, resulting from previous infection by the tubercle bacillus, such a negative reaction may be explained by supposing that the cells of the body are so saturated with toxin that they have lost all reactive power, and are therefore unable to produce anti-bodies. This supposition ignores the fact that some, at least, of those advanced cases are probably mixed infections. This is a term frequently used to cloak our ignorance, some authorities describing every patient who does not do well on tuberculin as being a case of "mixed infection." There appears to be little doubt, however, that some advanced cases are the subjects of true mixed infections, the toxin saturation of the body cells being brought about by the combined action of the tubercle bacilli and the other organisms. These negative Von Pirquet reactions, and the negative Widal reaction in acute toxic cases of enteric fever, are apparently analogous phenomena. They are of scientific interest but of no clinical value, the diagnosis being definite in both instances and not requiring confirmation, but the absence of the reactions may be taken as confirming the bad prognosis.

Of the 42 adults tested 4 gave negative results. After four months' treatment in the sanatorium 2 became positive, 1 remained negative, and 1 was not retested as he was under treatment for six weeks only. The details of one of these four cases are as follows:

Farm-servant, male, aged 22. Pain in left side of chest began seven months before admission, persisted for three months. He suffered from cough, night sweats, loss of appetite, and hæmoptysis

Shortly after admission to the sanatorium he had a further small hæmorrhage. Patient was well nourished and looked well, temperature was normal, expectoration nominal in amount, no tubercle bacilli. Physical signs consisted of dulness to percussion over upper and middle lobes of right lung, tubular breathing over upper right lobe, breath sounds distant over all lobes, and with fine crepitations distributed over both lungs. It will be seen that a diagnosis of pulmonary tuberculosis was warranted in this patient. He was not an advanced case, but was fit for light work, and when last heard of was being employed on a farm. He was strongly advised to remain in the sanatorium for at least three months, but was feeling so well that he determined to start work.

It is difficult to explain the negative results found in these 4 patients. That they are not rare cases is shown by the fact stated previously that 4 were found among 42 patients, giving a percentage of 9·5. Therefore, leaving out of account for the moment the negative reactions found in advanced cases, it may be stated that a negative Von Pirquet reaction is no proof that a patient is non-tuberculous.

Among the 42 adults there were 12 or more of the chronic fibroid type of pulmonary tuberculosis. Breathlessness was a frequent complaint, and in 7 of the 12 there was a history of one or more attacks of pleurisy. As an example of the type the following is typical:

Miner, aged 25. History of pleurisy, with effusion into left pleura, three years before admission into sanatorium. Thereafter kept well until six weeks before admission, when he complained of tiredness, shortness of breath, loss of appetite, cough with expectoration, night sweats, and loss of flesh. Patient poorly nourished and anæmic; seen to be breathless upon any exertion. Left side of chest collapsed. Impaired percussion note, distant breath sounds, and fibroid crepitations detected over lungs. Expectoration was scanty; temperature normal, remaining so during "graduated labour."

The Von Pirquet test was positive in all cases of the above type. In one the reaction was "marked," but in the others "moderately positive"—*i.e.*, there was a papule or an erythematous area whose longest diameter varied between 0·5 and 1 cm. These 12 chronic fibroid patients having all been ill previous to admission to the sanatorium, and the majority of them having recovered to a greater or lesser extent, one expected to find marked Von Pirquet reactions among them. From the absence of such reactions it may be inferred that patients who have suffered from pleurisy, etc., and who have made a good recovery, becoming capable of performing a certain amount of work without doing themselves harm, may have no abundance of anti-tubercle bodies demonstrable by the Von Pirquet test. This deduction assumes, of course, that the larger the number of tubercle immune bodies, the more marked the Von Pirquet reaction.

The 100 per cent. positive reactions obtained in the chronic fibroid

type of case confirmed the diagnosis, but prognostically no deductions could be made.

The term "marked reaction" is used to signify a papule or an erythematous area whose largest diameter exceeds 1 cm. Such reactions in adults are not very abundant, 4 being found among 42 being tested; but when found are usually of value. The following cases are illustrations. No. 2 is given for contrast:

1. Male, aged 40. Shortness of breath for years, but especially during the three months prior to admission; short cough for three months; sputum streaked with blood for five weeks; night sweats, loss of appetite and of flesh. No tubercle bacilli found. Patient was very stout; capillaries of face prominent. Right lung anteriorly: Slight dulness to percussion; breath sounds weak; abundant fine crepitations. Left lung anteriorly: A few fine crepitations. Right lung posteriorly: Slight dulness to percussion over upper lobe; R.M. tubular over upper and middle lobes. Left lung posteriorly: Tubular breathing over upper lobes; a few crepitations. This patient was admitted as a case of pulmonary tuberculosis, but his general appearance and symptoms did not appear altogether characteristic of that disease. He occasionally suffered from fairly severe attacks of dyspnœa, and at times complained of a feeling of compression in the region of the suprasternal notch. The diagnosis lay between phthisis, malignant disease of the lungs and pleura, and cardiac disease, or a combination of one or more of these. Examination of the heart was negative. X-rays were not available, but there were no signs pointing definitely to malignant disease. A Von Pirquet test was performed, and a marked positive reaction obtained within twelve hours. This was taken as indicative of active tuberculous disease in the body, and presumably in the thorax. Five months' residence in the sanatorium produced no improvement in his condition. Examination of the lungs on the day previous to admission revealed a very different state of affairs from what had been found a few weeks before. Right lung: Dulness to percussion was marked all over. Over upper and middle lobes anteriorly the vocal resonance was much increased; the breath sounds loud and tubular. Posteriorly the sign indicated that the right pleural cavity was almost two-thirds full of fluid. The upper right lobe posteriorly appeared to be solid. Aspiration of the right pleural cavity at this time would probably have discovered hæmorrhagic fluid, but as the patient was of nervous disposition and had to go home the following day it was considered inadvisable to explore. He died three weeks after discharge, having been confined to bed only a few days. By that time the left side was said to have been affected to much the same extent as the right. The patient's own doctor concurred in the opinion that malignant disease was present in the chest. This condition was strongly suggested by the rapid development of physical signs, but it appears reasonable to conclude that the malignant condition was a secondary deposit upon an already present tuberculous lesion in the lung, a diagnosis of phthisis being supported by the marked Von Pirquet reaction.

2. Male, aged 43. In this case the reaction was of prognostic value. Began to feel tired two years before admission, gradually

becoming worse; slight cough and expectoration; no tubercle bacilli found. Dulness to percussion; crepitations, etc., over lungs. On admission the Von Pirquet was definitely negative, but after a lapse of three months was found to be "markedly positive." There can be little doubt that the patient was suffering from a "slow form" of phthisis. The reaction becoming positive was associated with a general improvement in his condition, all symptoms disappearing, and the weight increasing; in other words, as a result of treatment the immediate prognosis was improved.

3. Male, aged 34. Glands in neck operated upon eighteen years ago; cough with expectoration for six years; pleurisy three years ago. Poorly nourished and very short of breath; numerous scars in neck. Left side of chest collapsed; physical signs abundant over lungs. The Von Pirquet was markedly positive, the longest diameter measuring 3 cm. This doubtless indicated the existence of reactive power in the tissues with the production of immune bodies, but this case shows that even these may be of little avail at a certain stage of the disease, as the patient described was hopelessly crippled, exhibiting dyspnœa even when lying in bed.

Thirteen of the 42 adults, or 30 per cent., had T.B. in the sputum. The Von Pirquet test was positive in them all, with the exception of the one advanced case already quoted.

Von Pirquet Reactions in Children.

The test was performed on 58 children, whose age and sex distribution are given in the accompanying table:

TABLE INDICATING AGE AND SEX DISTRIBUTION IN 58 CHILDREN SUBJECTED TO VON PIRQUET REACTION.

Sex.	Years.		
	0 to 4.	5 to 9.	10 to 14.
Females ...	0	13	16
Males	2	10	17
Total ...	2	23	33

The proportion of negative results found amongst children with pulmonary tuberculosis on admission to the sanatorium is noteworthy. Of the 58 children tested, 19, or 32·7 per cent., gave a negative reaction. Von Pirquet is quoted as having obtained 3 per cent. of negative reactions in tuberculous children; and though he examined many more than 58, the discrepancy between 3 per cent. and 32 per

cent. cannot be accounted for by the small number in the present series. After sanatorium treatment this percentage (32·7) was reduced to 17 per cent.

General Conclusions.

Adults.—(1) That the Von Pirquet test is of little value as a diagnostic and prognostic agent, except in a very limited number of cases.

(2) That a negative reaction is no proof that a patient is non-tuberculous.

(3) That a negative reaction may be obtained in advanced cases, but that a markedly positive reaction does not necessarily indicate a good prognosis.

(4) That the reaction is always positive when T.B. are present in the sputum, except in advanced cases.

Children.—(5) That the reaction may be negative in 30 per cent. of children with pulmonary tuberculosis.

(6) That after sanatorium treatment the percentage may be reduced to 17, the reduction indicating an improvement in the immediate prognosis.

THE RÔLE OF THE AMERICAN RED CROSS IN THE TUBERCULOSIS CAMPAIGN IN FRANCE DURING THE GREAT WAR.

By E. GLADSTONE DAVIES,

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Upon the declaration of war by the United States of America, the American Red Cross sent important contingents to France, establishing headquarters in Paris. Primarily the aim of this organization was of a purely military character, but it was soon recognized that the French civil population was in urgent need of assistance. Various sections, therefore, were created to cope with different pressing problems. One of these, "The Bureau of Tuberculosis and Public Health," was created in August, 1917, with the approval of the French Ministry of the Interior and the Service du Santé Militaire. The principal reasons for the establishment of this bureau were:

1. Nearly all the institutions in France for the treatment of tuberculosis had been temporarily requisitioned for military cases, and their medical staffs mobilized. The necessary facilities for the treatment of tuberculosis among the civilian population, refugees, and *repatriés* were consequently almost entirely lacking.

2 The Franco-German War of 1870 had demonstrated that war with its accompanying hardships was responsible for a formidable increase in the tuberculosis mortality. It was of extreme importance, therefore, to combat this recurring menace in the war then being waged.

3. An investigation made in France early in 1917 by Dr. Hermann Biggs, of New York, had revealed the necessity of some action being taken to combat the ravages of tuberculosis in that country.

As a result of this investigation the Rockefeller Institute appointed a Special Commission to co-operate with the French health authorities. The sphere of this Commission was limited to carrying on an extensive propaganda, to educational work, and to the creation and operation of dispensaries. It fell to the Bureau of Tuberculosis of the American Red Cross to augment this work, for its command of funds was so considerable that it was enabled to extend its assistance to the whole field of tuberculosis work. Close co-operation was maintained between the Commission and the Bureau throughout the work in France, and the sphere of each was clearly defined.

The early efforts of the Bureau were devoted chiefly to meeting the immediate needs of the various tuberculosis institutions, particularly those for the care of military cases. During this early period delegates were sent out to make a rapid survey of the general situation in France. As a result of this preliminary investigation, it was deemed advisable to formulate a programme, both theoretical and practical, as a basis for future work, since it was evident that the mere distribution of relief was not in itself sufficient to bring about any considerable amelioration in the tuberculosis situation. In drawing up this programme the Bureau was guided by the efforts which in America and England had effected a reduction of 60 per cent. in the tuberculosis mortality during a period of thirty years.

It was obvious that such a programme must be adaptable to the peculiar conditions in France, and sufficiently elastic both to meet the exigencies of war and at the same time prepare for the requirements of peace. The population was calculated according to the census of 1911, and the death-rate from tuberculosis on the figures of 1913. The number of living cases was estimated, according to the Biggs factor, as five times the tuberculosis rate. On this estimate of living cases a complete programme would require the establishment of the following equipment:

100 per cent. (basis for estimation)	...	The living cases.
15 ,, ...	...	Hospital beds.
10 ,, ...	...	Sanatorium beds.
1 ,, ...	...	Day camp beds.
2 ,, ...	...	Preventorium beds.
4 ,, ...	...	Open-air schools.
68 ,, ...	...	Dispensary and domiciliary treatment.

Space does not permit discussion of the accuracy of this programme, but it may be of interest to mention that the Newsholme factor for the estimation of living cases is 2·89 (*i.e.*, three times the deaths), that the Biggs factor is five, and the Phillips factor ten.

It was recommended that 25 per cent. of this programme should be attempted. Wherever it seemed possible to inaugurate a part of the programme in such a way that the work might be ultimately organized into a departmental (*i.e.*, county) unit, every assistance was given by the Bureau. When the operation of any tuberculosis institution could be hastened by a subvention, this was granted, and every effort made to reduce the admittedly long period required for the realization of a tuberculosis programme. On the basis of this programme the following activities were undertaken:

1. The departmental survey of all tuberculosis activities: those already operating, those in immediate prospect, and those in the project stage.
2. The amelioration of conditions in existing tuberculosis institutions.
3. The subvention of dispensary construction and their operation.
4. The subvention of hospital and sanatoria construction and their operation.
5. The creation and operation of sanatoria by the Bureau.
6. The subvention of popular educational propaganda.
7. The subvention and assistance to special fields of work.
8. Co-operation with the American Expeditionary Forces.
9. The organization and operation of a "Hospital Admission Bureau," and Social Service in the Paris hospitals.

In amplification of the above headings, it may be interesting to give a few of the more important details connected with each.

1. The inspection of all tuberculosis institutions throughout France was accomplished by specially trained delegates, who were required to investigate as thoroughly as time and circumstances permitted the tuberculosis situation in the regions to which they were assigned. Further, these delegates were required to submit careful reports on the condition and requirements of the various institutions visited, and to collaborate with the regional health authorities in the preparation of future schemes. As a result of these investigations, practically every department of France received assistance of some nature.

2. The inadequate accommodation for the treatment of tuberculosis necessitated the conversion and adaptation as sanatoria of available premises. These improvised sanatoria, although not entirely satisfactory, at least supplemented the shortage of beds at that period. The Bureau accorded subventions for the erection of cure galleries, recreation rooms, etc., and for the installation of X-ray apparatus, laboratories, sanitary and other equipment.

3. Subventions, varying from 10 to 40,000 frs. according to the importance of the centre, were given to 106 dispensaries, the majority of which had been created during the war, and when the Bureau terminated its activities in May, 1919, a further twenty-one were in course of creation. Training centres for visiting nurses were also subventioned.

4. Subventions — averaging 1,000 frs. a bed — were granted to various hospitals and sanatoria in course of construction or in the project stage. Two thousand seven hundred and twelve new beds were thus subventioned.

5. The number of patients applying directly to the Bureau for advice and hospitalization becoming more and more numerous with the influx to Paris of refugees and *repatriés* afflicted with tuberculosis, a "Hospital Admission Bureau" was created to deal with them, and to place them whenever possible in existing institutions. As the applicants for hospitalization far exceeded the number of beds vacant, the Bureau decided to equip, operate, and maintain a total of 888 beds in the following premises, which were transformed to serve as sanatoria under the direction of American doctors and nurses:

(*a*) *Sanatorium de Plessis-Robinson.*—In October, 1917, a vast property on the outskirts of Paris was transformed by the Bureau into a centre of tuberculosis for civilians, refugee women, and the children of Paris. It comprised an admission block, hospital for children, a preventorium and a sanatorium for women, with a total bed-capacity of 356.

(*b*) *Château de la Fontaine Bude.*—This establishment was transferred to the Bureau by the Œuvre des Tuberculeux de la Guerre, an American society which had for some time been actively engaged in tuberculosis work in France. This sanatorium, with a bed-capacity of 92, was reserved for cases among the male civilian population of Paris. Upon the cessation in May, 1919, of the Bureau's activities, this sanatorium and that of Plessis-Robinson, both fully equipped, were transferred to the Public Health authorities of Paris, and form important units in this city's tuberculosis scheme.

(*c*) *Asile Sainte-Eugénie.*—This was situated in an unoccupied wing in the Civil Hospital of Lyons, and was completely equipped by the Bureau for the purpose of hospitalizing tuberculous women repatriated through Switzerland. The percentage of tuberculous cases among these convoys of *repatriés* varied from 50 to 60 per thousand.

(*d*) *Champigny (Loir-et-Cher).*—This small temporary sanatorium, with a bed-capacity of 30, was operated by the Bureau in connection with the dispensary at Blois, and formed the nucleus of a larger sanatorium to be constructed after the war.

(*e*) *Hôpital Bénévole No. 19 bis, Paris.*—This temporary institution, with a bed-capacity of 30, was transferred to the Bureau by the Œuvre

des Tuberculeux de la Guerre, and was reserved for military and civilian cases in the Paris district.

6. Subventions were granted by the Bureau in connection with the propaganda and educational work of the Rockefeller Commission.

7. Serbian Relief. (*a*) Scattered throughout France were 20,000 Serbian refugees, chiefly students. A high percentage of these were tuberculous, and, after thorough investigation, a considerable amount of relief was distributed among them, through various agencies. In addition, hospital huts which had been constructed and equipped by the Bureau at Malabry, near Paris, were operated and maintained to provide treatment for 200 Serbs. (*b*) French Red Cross (S.B.M.). A subvention was accorded this society for the creation of a Technical Bureau of Tuberculosis in order that it might more effectively engage in the tuberculosis campaign and give the necessary technical advice to its numerous branches throughout France. Further, the dispensaries of this society were subventioned wherever they formed a unit in a tuberculosis scheme.

8. The Bureau co-operated with the American Army in the preparation of tuberculosis propaganda for use in the American Army and provided technical advice in connection with plans for a special hospital where tuberculous American soldiers could be treated. During the offensive of Château Thierry, the hospital huts at Malabry were placed at the disposal of the American Army, and cases were treated there for a period of three months.

9. Annexed to the various hospitals of Paris were hospital huts capable of accommodating 1,200 tuberculous cases. Owing to lack of comfort and insufficient food these huts remained almost unoccupied. A special service was organized by the Bureau for improving the conditions in these huts and for making them more attractive to the many patients requiring treatment. Diet kitchens were installed, recreation rooms, and cure galleries. Food and clothing were distributed weekly. Social workers attached to the Bureau made frequent visits to the patients in these huts, and, when the patients were returned to their homes, these visits were continued, relief being given, and, whenever possible, suitable work found for the patients. The results more than justified the institution of this Social Service, the number of patients being increased during the first few months from 172 to 657, and eventually the 1,200 beds were maintained at full capacity. In connection with this service a convalescent home at Villejuif with a bed-capacity of 22 was equipped and maintained by the Bureau. The Hospital Admission Bureau, to which reference has already been made, succeeded in placing over 3,000 patients in various French institutions and in those created and operated directly by the Bureau.

Six months after the cessation of hostilities, the Bureau of Tuber-

culosis and other sections of the American Red Cross were dissolved. From this résumé of its activities, it will be seen that the Bureau undertook to accomplish a considerable amount of work, and assumed a responsibility which it satisfactorily discharged. It encouraged and stimulated French initiative, and by its assistance facilitated the completion of projects which would, owing to the exigencies of war, either have been abandoned or indefinitely postponed.

ASSOCIATIONS AND INSTITUTIONS.

THE INTERNATIONAL SOCIETY OF PNEUMOTHORAX ARTIFICIALIS.

PROFESSOR U. CARPI of Lugano has favoured us with the following particulars of "Pneumothorax Artificialis." It is an international association founded in connection with the International Tuberculosis Congress held in Rome April, 1912. It aims to provide a centre for the exchange of ideas among medical men who study and practise therapeutic pneumothorax. It also publishes yearly, or more often, a list of members who are engaged in this form of treatment. The Society also undertakes, at the request and expense of authors, the distribution among members of reprints of scientific works. The reprints should be sent in sufficient numbers to the Secretary. The annual subscription—which is 5 francs, payable in advance—should be sent to the General Secretary, Professor U. Carpi, Lugano, Switzerland. The executive consists of a Chairman, a Secretary, and four members, representing those accustomed to use English, French, German, and Italian languages. The executive is elected at the general meetings of the Society, which are planned to be held in connection with international tuberculosis congresses. Vacancies which occur by resignations in the intervals will be filled up by the executive. Should the Chairman resign, the other members of the executive will appoint his successor for the remainder of his term of office. The executive, when unanimous, is empowered to make minor changes in the statutes. Radical changes in the statutes can be made only at a general meeting. The Society appoints for every country or language one or more representatives to supply reviews, extend the Society's membership, and to act as a link between the executive and the members. The Secretary is empowered to act as manager, and may, with the consent of the Chairman, employ assistants at the expense of the Society. A balance sheet, together with a list of members, is to be distributed every year. Before the war the Society published at regular intervals the journal *Pneumothorax Thérapeutique*, in which were reviewed the most important articles on the subject of pneumothorax. The Society's executive committee is now considering the advisability of replacing this review by monographs, which it is proposed should appear in prominent journals in different countries, and making special mention of all recent publications of therapeutic pneumothorax in order to create interest and activity among the different sections of the association. Several colleagues have expressed doubts as to the necessity for this, contending that the field for therapeutic pneumothorax is too limited. The answer may be given in the words used by Professor Forlanini when he presented his colleagues from all parts of the world with the first copy of *Pneumothorax Thérapeutique:* "Personne ne voudra affirmer, à présent, que le Pneumothorax artificiel, même en y ajoutant les pratiques de Thoracoplastique qui en sont dérivées, puisse donner matière suffisante pour une spécialité

scientifique ; ce ne serait qu'un émiettement de la Phtisiothérapie sans but et sans utilité. Mais je n'hésite pas à affirmer que le Pneumothorax artificiel, même tout seul, peut utilement donner matière à une spécialité pratique ; soit à cause du grand nombre de cas auxquels on l'applique et l'assiduité des soins que ces cas exigent, soit à cause de la nette délimitation de son champ et de l'indépendance de ses moyens, soit, et surtout, à cause de la compétence tout à fait spéciale qu'il exige. Sans doute le Pneumothorax artificiel, à cause de la grande simplicité et de la sûreté absolue de la technique opératoire, est aujourd'hui à la portée de tout le monde ; chaque praticien peut pratiquer le Pneumothorax. Mais je suis convaincu que pour tirer de la méthode tout ce quelle peut rapporter d'utilité—que je persiste à croire considérable, malgré quelques avis contraires—et sourtout pour éviter les causes multiples d'échouement que le traitement peut rencontrer pendant sa longue durée, c'est nécessaire une maitrise complète, bien plus que du technicisme opératoire, du clinicisme (sit venia verbo) de la méthode, telle qu'on ne peut acquérir qu'avec une expérience longue et assidue. Tous les praticiens peuvent traiter des phtisiques avec le Pneumothorax et en obtenir même des succès dans tel ou tel cas ; mais l'optimum du succès et de l'utilisation de la méthode dans un très grand nombre des cas, et pas dans des cas isolés, ne peut être realisé que parcle médecin qui c'est adonné exclusivement ou préférablement à la méthode. Ainsi considérés je crois utile, pour ne pas dire nécessaire, qu'il yait des médecins spécialistes du Thérapeutique par le Pneumothorax."

PRINCESS MARY'S HOSPITAL FOR TUBERCULOUS CHILDREN, MARGATE.

Princess Mary's Hospital for Children, Cliftonville, Margate, built by the Metropolitan Asylums Board for the treatment of 270 London children with all forms of non-pulmonary tuberculosis, was opened in October, 1919, and is now nearly full. The buildings occupy a sloping site of just over three acres, facing almost due south. Thus full advantage is gained from the sun, while there is protection from the prevalent winds from the sea, which are often severe and cold. The buildings consist of: (*a*) one double-storeyed block—the "hospital" block—containing, in addition to three wards, the operating theatre, X-ray room, laboratory, plaster and splint rooms, and dispensary, and attached to the ground floor a long verandah accommodating forty beds in a single row; (*b*) four single-storeyed, pavilion type, L-shaped verandah wards accommodating forty beds in two rows of twenty, and arranged round these strictly "open-air" wards are the ward offices—dayroom, kitchen, small ward used for special cases when necessary, bathrooms, cloakroom, and a complete "separation" ward with lavatory, etc., for the isolation of suspicious cases of infectious disease. The remaining buildings consist of open-air schoolrooms and workshop, laundry, stores, kitchens, and staff quarter blocks. The patients are thus practically all under treatment in verandahs. Each verandah is provided with revolving shutters of the shop variety which can readily

be pulled down should rain beat in, and efficient ventilation is secured by appropriate arrangement of the roof, which is of the "span" variety. The beds are divided approximately equally between boys and girls up to the age of sixteen years, who are classified primarily according to age, to facilitate administration, and the teaching in bed of the recumbent cases. Convalescent cases go to the schoolrooms, education being carried out generally through the hospital, in accordance with the regulations of the Board of Education for Special Schools. The educational work is found a most useful adjunct to the treatment as providing occupation and improving ward discipline. Cases of all stages of bone and joint, glandular, and abdominal disease are received, but it is thought that in view of the limitations of the site affecting the treatment of ambulatory cases, the most advantageous and economical use of the hospital will be made by restricting the number of convalescent cases as much as possible, and confining the treatment more especially to recumbent cases requiring extension, immobilization, plaster-of-paris jackets, and the other usual methods of the conservative treatment of surgical tuberculosis. The difficulty of transport from London affects the admission of the specially suitable cases, but this it is hoped may shortly be overcome. One hundred beds are reserved for the London County Council in connection with the Council's tuberculosis scheme, while the remainder of the cases come from the various Metropolitan Boards of Guardians. There is unanimous agreement as to the suitability of the climate of Margate for the treatment of the non-pulmonary forms of tuberculosis, and the need for such an institution as an instalment of what will be required in this respect for London is shown clearly by the number of cases waiting admission. The provision of a second institution, more especially for the cases advanced to ambulatory treatment, would increase enormously the efficiency of the work, and enable the institution to act as a "clearing house" for much larger numbers of cases, and it is in this direction it is hoped further progress will eventually be made. Dental treatment is provided for all patients, who are inspected periodically, and leave the institution dentally "fit." The nursing staff, directed by the Matron, is well qualified, each ward being supervised by a Sister with special experience in orthopædic work, assisted by two Staff Nurses and by Probationers, who are accepted for two or three years' training. A trained nurse is on duty at all times in the wards, and, as in all branches of the Board's service, the forty-eight-hour week is the rule. So far as it is possible to judge at this date, the children do well, and satisfactory results are already being obtained.

The above particulars have been kindly forwarded by the Medical Superintendent, Dr. Henry O. West.

NOTICES OF BOOKS.

TUBERCULOSIS AND PUBLIC HEALTH.

TUBERCULOSIS is a complex medico-sociological question, with far-reaching associations and consequences. It is essentially a problem in social medicine, and must be studied and dealt with as a matter relating to public health. Dr. H. Hyslop Thomson has rendered a valuable service by the issue of a study of tuberculosis from this point of view.[1] The book has been prepared primarily for medical practitioners, but it is one which everyone interested in the prevention and arrest of tuberculosis and connected in any way with public health affairs will be wise to study. "If the problem of tuberculosis is finally to be solved due importance must be attached to the question of prevention, and the disease must be viewed not merely as a morbid condition which calls for early diagnosis and immediate treatment, but, in addition, as the morbid expression of an inadequate hygienic standard of life, which requires to be remedied." In these words the author gets down at once to bed-rock principles. The book opens with the statement that "tuberculosis is a disease of communal life, and is intimately related to the social and economic conditions of the people," and this is a truth which needs constantly to be emphasized. Dr. Hyslop Thomson opens with a consideration of tuberculosis as a health index. Then follow informing chapters on Types of the Disease, Causative Factors, Housing, Milk, and Prevention and Contra-infection. An excellent chapter deals with the necessity for early diagnosis. In the section where schemes of treatment are discussed the following appears: "The structure of a complete scheme for dealing with tuberculosis . . . must be based on a solid foundation, which includes, in addition to preventive effort, hospital domiciliary and dispensary treatment, and super-imposed upon this the necessary provision for the sanatorium colony, after-care, and the permanent village settlements, which have recently been recommended by the Committee on Tuberculosis. To secure the effective local administration of a scheme of this nature requires co-ordinated action by the various authorities, which in their respective spheres are responsible for the carrying out of preventive or curative measures. . . . It would appear desirable, therefore, in order to secure that complete unification of effort which is so essential to ultimate success, that the problem of tuberculosis and other public health measures should be dealt with by a public health committee, on which the various authorities and bodies which have to do with the prevention and treatment of disease would be represented. It is also desirable, in the light of past experience, that the general procedure to be adopted with regard to the prevention and treatment

[1] "Tuberculosis and Public Health." By H. Hyslop Thomson, M.D., D.P.H., County Medical Officer of Health, County Tuberculosis Officer and School Medical Officer for Hertfordshire, formerly Tuberculosis Officer for Newport and East Monmouthshire, Medical Superintendent Liverpool Sanatorium, and Medical Superintendent Consumptive Sanatorium of Scotland, Bridge of Weve. Pp. xi + 104. London: Longmans, Green and Co., 39, Paternoster Row, E.C. 4. 1920. Price 5s. net.

of tuberculosis should be clearly laid down, so as to secure a greater measure of uniformity throughout the country, and to obviate what is so prejudicial to sustained and ultimate success—namely, the absence of any generally recognized efficient system of carrying out preventive measures and institutional treatment." All this is wisely said, and it may be hoped will have influence in simplifying the wasteful, hampering, and unscientific methods which now prevail in so many districts. Dr. Hyslop Thomson's manual is a timely and serviceable contribution to practical health politics.

ADVICE TO CONSUMPTIVES.

Dr. Noel D. Bardswell in 1910 issued a practical little manual for the use of consumptives, indicating something of the nature of the disease from which they were suffering, explaining the influence of such healing and preventive agents as fresh air, food, rest, exercise, recreation, and the like, and offering in simple words explicit directions regarding essentials in sanatorium treatment. The handbook has accomplished a notable service. A second edition has just been issued.[1] It is just the work which medical advisers will be glad to put in the hands of intelligent patients. In addition to information regarding the subjects already referred to, there are chapters dealing with such questions as occupation and emigration. The concluding section deals with the disposal of sputum, cleansing, disinfection, furnishing, and other matters of practical importance. As far as we can see, the second edition is a reproduction of the first, and we could have wished that it might have been possible for the author to have added sections on colony and community life and some of the other questions which are now being discussed, and regarding which many patients are desirous of guidance. The manual contains no index.

X-RAY EXAMINATION OF THE CHEST.

Radioscopy and radiography, when employed by discriminating clinicians and expert radiologists, is capable of rendering valuable assistance in the diagnosis and general management of intra-thoracic tuberculosis. As evidence of this claim we would earnestly advise all readers of this journal to read Dr. Overend's recently issued book on the Radiography of the Chest.[2] This is the first volume of a larger work, and deals with the methods and results of X-ray examination in

[1] "Advice to Consumptives: Home Treatment, After-Care, and Prevention." By Noel Dean Bardswell, M.V.O., M D., F.R.C.P., Principal Assistant Medical Officer, Public Health Department, London County Council, and Medical Adviser to the Insurance Committee for the County of London; late Medical Superintendent, King Edward VII. Sanatorium. With a Foreword by the late C. Theodore Williams, M.V.O., M.D., F.R.C.P., Consulting Physician, Brompton Hospital for Consumption, and the King Edward VII. Sanatorium. Second edition. Pp. xvi +153. London: A. and C. Black, Ltd., 4-6, Soho Square, W. 1. 1920. Price 3s. 6d. net.

[2] "The Radiography of the Chest: Pulmonary Tuberculosis." By Walker Overend, M.A., M.D. (Oxon.), B.Sc. (Lond.), Hon. Radiologist and Physician to the Electro-Therapeutic Department of the East Sussex Hospital, Hastings, etc. Pp. vii+119, with 9 line diagrams and 99 radiograms. London: William Heinemann (Medical Books), Ltd., 20, Bedford Street, W.C. 2. 1920. Price 17s. 6d. net.

pulmonary tuberculosis. The author shows that the correct interpretation of pulmonary opacities may be a very difficult problem, and necessitate the exercise of expert clinical skill as well as wide radiological experience. His book is of special value for its clinical records and large number of radiograms. The following classification is adopted: Tuberculosis of Bronchial Glands; Broncho-pneumonia, nodular and nodal types; Broncho-pneumonic Pseudo-lobar Tubercle; Minor Phthisis, Fibroid Phthisis, and Pneumonic Phthisis; Miliary Tubercle. The last two chapters deal with the complications of pulmonary tuberculosis and the radiological diagnosis of pulmonary phthisis. Dr. Overend, in his concluding remarks, urges the importance of the mutual co-operation of the clinician, pathologist, and radiologist, "in order to increase knowledge of the disease in its incipient stages, its principal types, the life-history of each, and to mature the methods of treatment and control." It is advised that observations should be made at short intervals. "Certain signs are special to the radiologist: the progressive studding of the bronchi in slow perihelar dissemination, the hazy outlines of an apical active infiltration, the wedge of dilated vessels or lymphatics, with its apex at the helium in many congestive cases; the small nodular foci in the supra-clavicular and paravertebral triangles, the unexpected diffusion of nodular foci from half-emptied cavities, the fusiform scraps and cylindrical fragments, producing a broken chain from the helium to the clavicle and axilla, in forms passing into arrest and fibrosis, the circumscribed sharp edges of calcareous foci and of healed arrested fibroid patches and the caseating opacities of the central lymphatic glands—these are phenomena which the radiologist must learn to recognize, and at the same time assign to each its proper importance and interpretation." The volume is of exceptional interest and much practical value. Every centre dealing with chest cases should possess a reliable radiographic equipment, and all clinicians dealing with patients suffering from pulmonary tuberculosis should make a point of studying Dr. Overend's able monograph.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

Sir Robert H. Firth has provided medical observers and students of human problems with a delightful collection of suggestive and stimulating essays on many matters relating to the thoughts and actions of mankind.[1] These have been prepared during journeys in India, France, and elsewhere. The author, in the course of his professional service in different parts of the world, has seen and thought much, and many will be grateful for these graceful analytical, philosophical, and practical studies of problems dealing with man and his relationships. There are seventy-five separate essays, and among those likely to be of special interest to our readers we would mention the following: The Toll of War, Evolution, On Knowing Oneself, On Sex, Male and Female, On Death, Colour-Bar, Man and Nature,

[1] "Musings of an Idle Man." By Sir R. H. Firth, K.B.E., C.B., Colonel, and late a Deputy-Director of Medical Services with the British Army in France. Pp. xii + 359. London: John Bale, Sons, and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, W. 1. 1919. Price 7s. 6d. net.

Mysticism, The Fear of Death, Industrial Unrest, On Growing Old. This charming little volume is dedicated to Old Comrades and "to the memory of the 568 officers and 4,634 other ranks of the Royal Army Medical Corps who gave their lives for King and Country in the Great War of 1914-1918."

Dr. R. Prosser White in 1915 published a highly original and thoroughly practical handbook on "Affections of the Skin in their Relationship to Occupation." We are glad to be able to welcome a second edition of this really notable book.[1] It is one which should be in the possession of every medical practitioner, and we commend it to tuberculosis officers and others called to deal with cases in dispensaries, sanatoria, hospitals, or in the course of public or private professional work. The work has undergone careful revision, and has been brought up to date. The author claims that his book is mainly a compilation, but it is only as the outcome of extensive practical experience and wide study of the literature of the subject that such a serviceable manual could have been prepared. In dealing with spirotrichosis, the author states that the lesions are often mistaken for and treated as surgical tuberculosis. An interesting note appears regarding an observation of Berck's: "In a convalescent hospital on the seashore the limbs of the tuberculous children were exposed to the unprotected sunlight. Both limbs became tanned, but the darkening on the affected leg or part was so markedly deeper in comparison with its fellow that, by this sign alone, he found it easy to judge which side, or member, suffered from active tuberculosis." The book is admirably arranged, well illustrated, and references are numerous. There is a splendid index.

Professor Leduc of Nantes has made ionic therapy practicable as an addition to measures available in medicine. Electric ionization is now being used extensively, and apparently with good results. Dr. A. R. Friel has recently issued an excellent introduction to the whole subject as it relates to medicine and surgery.[2] The nature of ionization and its management are explained in detail. The effects of the different ions are considered, and descriptions are given of methods of treatment. In many tuberculous subjects pathological conditions are met with where ionization seems likely to be of service. With regard to its use in lupus vulgaris the technique advocated by Drs. Stopford Taylor and Mackenna, of Liverpool, is referred to: "Pointing out that lupus nodules have a covering of ill-developed epithelium, which is less resistant to the action of liquor potassæ than the surrounding healthy skin, they direct that the surface should be first rubbed over with this to denude the lupus nodule of epithelium, and so favour the entrance of a current of zinc ions at these points. Before applying lint soaked in zinc solution, all the liquor potassæ is wiped away. The current should be as strong as the patient can bear, and should be

[1] "Occupational Affections of the Skin: Their Prevention and Treatment, with an Account of the Trade Processes and Agents which give rise to them." By R. Prosser White, M.D., M.R.C.S., Life Vice-President, Dermatologist, Senior Physician, and Enthetic Officer to the Royal Albert Infirmary, Wigan, etc. Second Edition. Pp. xiv+360, with 24 plates. London: H. K. Lewis and Co., Ltd., 136, Gower Street, W.C. 1. 1920. Price 25s. net.

[2] "Electric Ionization: A Practical Introduction to its Use in Medicine and Surgery." By A. R. Friel, M.A., M.D. (Dub.), F.R.C.S.I., Aural Specialist, Ministry of Pensions, London District; Late Physician for the Throat, Nose, and Ear, General Hospital, Johannesburg. Pp. 78. Bristol: John Wright and Sons, Ltd. 1920. Price, cloth, 8s. net; paper, 6s. net.

continued for fifteen to twenty minutes. There is considerable local reaction following the treatment. Serum exudes, which dries into a crust, and this should not be disturbed. It falls off in about a fortnight. It will then be found that many of the nodules have disappeared. The treatment should be repeated once a fortnight until all the nodules are destroyed." Dr. Friel's compact and informing monograph meets a real need. It is lucidly written, and the volume is helpfully illustrated.

Professor W. P. Bowen's work on "Applied Anatomy and Kinesiology" is doubtless known to many readers of this journal. It is a member of "The Physical Education Series," edited by R. Tait Mackenzie, B.A., M.D., Professor of Physical Education and Physical Therapy in the University of Pennsylvania at Philadelphia, and well known in this country for his notable service during the war in connection with the Royal Army Medical Corps. We desire to direct attention to the recent issue of a second and thoroughly revised edition of this admirable work.[1] Kinesiology is the science of bodily movement, and is a subject with which medical advisers generally, and particularly such as are engaged in duties aiming at the prevention and arrest of tuberculosis, should be intimately acquainted. We strongly advise tuberculosis officers, school medical officers, and the like, to procure a copy of Professor Bowen's fine work, and to study it in its entirety. "The real test of the mastery of this subject by the student is the ability to analyze and solve problems of kinesiology that occur daily in the practice of the physician and the physical educator." The volume is admirably got up, and is effectively illustrated.

Under the title of "Anti-Tuberculous Reconstruction," an anonymous brochure has been issued, dealing principally with the importance of developing constitutional resistance as an anti-tuberculosis agency.[2] Sanatorium management and the election of tuberculosis officers are discussed, and a number of practical recommendations, which the author conceives will make for greater efficiency in the tuberculosis service, are set forth in attractive and suggestive forms.

The subject of Accessory Food Factors or Vitamines is one regarding which all dealing with tuberculous cases and particularly tuberculous children should be fully acquainted. The recent Report, issued through the Medical Research Committee, provides a full and up-to-date presentation of our available knowledge, together with references to the most important publications dealing with the question.[3]

"The Medical Annual" is now in its thirty-eighth year. The issue for 1920 fully maintains the high standard which we expect from this

[1] "Applied Anatomy and Kinesiology: The Mechanism of Muscular Movement," By Wilbur Pardon Bowen, M.S., Professor of Physical Education, Michigan State Normal College, Ypsilanti, Michigan. Second edition, thoroughly revised. Pp. 334. Philadelphia: Lea and Febiger, 706-710, Sansom Street. 1919. Price $3.50.

[2] "Anti Tuberculosis Reconstruction." By D. P. H., R.C.P.S.I. Pp. 38. Dublin: Maunsel and Company, Ltd., 50, Lower Baggot Street. 1920. Price 6d. net.

[3] "Report on the Present State of Knowledge concerning Accessory Food Factors (Vitamines)." Compiled by a committee appointed jointly by the Lister Institute and the Medical Research Committee. Special Report Series, No. 38. Pp. 107. London: H.M. Stationery Office, Imperial House, Kingsway, W.C. 2. 1919. Price 4s. net.

well-known and widely-appreciated reference work.[1] Drs. Carey F. Coombs and A. Rendle Short are the Associate editors, and there are thirty other contributors. The customary arrangement of the volume is continued, but the articles are of course new, and all sections are brought up to date. Dr. Arthur Latham deals with pulmonary tuberculosis, Dr. P. Watson-Williams with laryngeal tuberculosis, and Sir W. I. de Courcy Wheeler with "surgical" tuberculosis. Dr. E. Graham Little describes Boeck's type of tuberculous dermatomyositis. Dr. Joseph Priestley, in his section on Public Health Administration, has an all-too-brief paragraph on the institutional management of tuberculosis. There is a directory of "Sanatoria for Consumption and other Forms of Tuberculosis," which, unfortunately, is by no means complete. We would suggest that in future issues more attention should be devoted to social and preventive medicine. The volume is plentifully illustrated and excellently got up.

The 1920 issue of the official publication of The Federation of British Spas[2] provides an up-to-date, reliable, and serviceable guide to British health resorts, and will be of considerable help to medical advisers and health seekers. The work has been effectively produced, and is attractively illustrated. The table of health centres, indicating distance from London, climatic conditions, and special features, will be of assistance for rapid reference.

Recent publications issued by the Trustees of the British Museum will be found to be of service by tuberculosis officers and medical superintendents of sanatoria. Major E. E. Austen has prepared a practical monograph on the House-Fly, with illustrations and particulars regarding measures for the abatement or suppression of the fly nuisance and danger.[3]

Dr. W. D. Lang's fine handbook on British Mosquitoes is a work of reference which will appeal to many readers of this journal.[4]

The last issue of the official bulletin, *Sanidad y Beneficencia*,[5] contains a suggestive paper in English on "Atoxic Anti-Tubercular Vaccine," by Dr. Joaquin Dávila, Professor in the Department of Veterinary Medicine of the University of Havana.

[1] "The Medical Annual: A Year-book of Treatment and Practitioners' Index," vol. xxxvii. Pp. cxxxvi+639, with illustrations. Bristol: John Wright and Sons, Ltd. 1920. Price 15s. net.

[2] "British Spas and Health Resorts" (with a chapter on the Spas of New Zealand). A Book of Reference for Medical Men and Health Seekers. Prepared with the assistance of the Local Medical Committees, with an introductory chapter by R. Fortescue Fox, M.D., M.R.C.P., F.P.Met.S. Pp. 240, with 37 illustrations, 2 maps and temperature chart. London: Edward J. Burrow and Co., Ltd., 93, Kingsway, W.C. 2. 1920. Price 2s. net.

[3] "The House-Fly: Its Life-History and Practical Measures for its Suppression," by Major E. E. Austen, D.S.O. Pp. 52, with 11 figs. London: The Trustees of the British Museum. 1920. Price 1s. 6d. net.

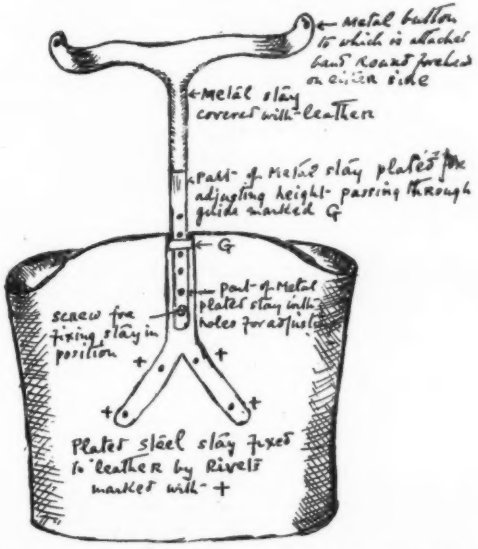
[4] "A Handbook of British Mosquitoes." By William Dickson Lang, M.A., Sc.D., Assistant attached to the Department of Entomology. Pp. vii+125, with 5 plates. London: Printed by order of the Trustees of the British Museum, and sold by Longmans, Green and Co., 39, Paternoster Row, E.C. 4. 1920.

[5] *Sanidad y Beneficencia*, Boletín Oficial de la Secretaria Publicacion Mensual inscripta en la Asociacion de la Prensa Medica de Cuba. Director, Dr. Fernando Méndez Capote. Tomo. XXI., Núms. 4, 5, and 6. This journal is distributed gratuitously from Habana as a source of information regarding scientific work in the island of Cuba.

PREPARATIONS AND APPLIANCES.

TUBERCULOSIS OF CERVICAL GLANDS.

HILTON in his classical work "Rest and Pain," a book which should be known and studied by every student and practitioner of medicine, has indicated lines of investigation and methods of treatment which all tuberculosis officers and other medical advisers called to deal with tuberculous cases would do well to consider. In children affected with tuberculosis of the cervical glands the principle of rest is of great importance, and yet it is constantly neglected in actual practice. Dr. Ryan, of St. Moritz, Coulsdon, Surrey, has sent us particulars of a


Metal button to which is attached band round forelock on either side
Metal stay covered with leather
Part of Metal stay plated for adjusting height passing through guide marked G
G
Part of Metal plated stay with holes for adjustment
screw for fixing stay in position
Plated steel stay fixed to leather by Rivets marked with +

simple but very effective contrivance which he has invented for the fixation of the head in children affected with tuberculous glands. From practical experience of this admirable appliance, we have no hesitation in recommending it to our readers. The apparatus is by no means elaborate, and can be easily constructed.[1] The chief features of the fixation appliances are shown in the accompanying illustrations. There is a light chest piece to which is fixed, by rivets, a plated steel stay. This has holes for the insertion of a screw permitting of suitable

[1] Dr. Ryan's original plans have been carried out by Mr. James Saunders, Surgical Instrument Maker, 5, The Grove, Camberwell, London, S.E. 4, who will be glad to supply medical advisers with full particulars.

adjustment. The upper part of the metal stay is covered with leather and fixes the back of the head. At the ends of this crescentic piece

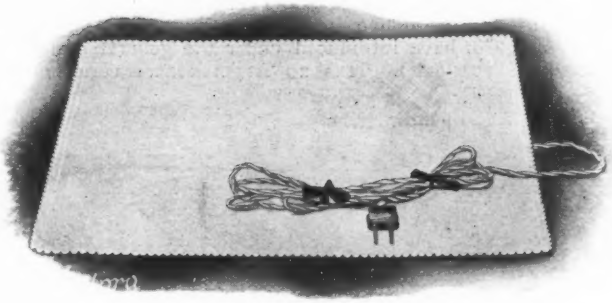
APPARATUS APPLIED: SIDE VIEW.

are metal buttons to which is attached a band which is carried round the forehead.

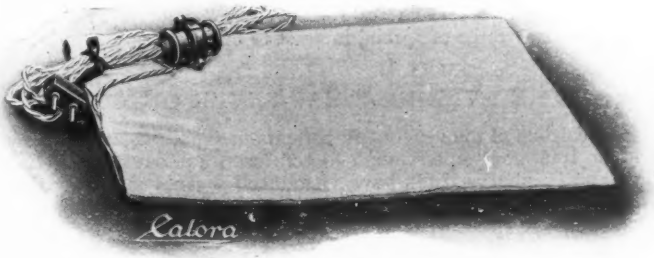
ELECTRICALLY HEATED APPLIANCES.

Sir Henry Gauvain in our last number directed attention to the value of electrically heated mattresses in the care of such sick tuberculous children as are being treated in accordance with open-air methods at Alton. It is quite clear that there is a great future for the

THE "CALORA" MAT.



THE "CALORA" BED-WARMER.



THE "CALORA" BODY PAD.

THE "CALORA" BANDAGE.

application of electric power in connection with hospital and sanatorium management, as well as for the benefit of patients and delicate persons in their own homes. The well-known firm of M. E. Du Bois and Co. have introduced under the general designation of "CALORA" ELECTRICALLY HEATED APPLIANCES a series of pillows,

THE "CALORA" FOOTBAG.

cushions, footmuffs, bandages, rugs, and the like, for use both in health and in sickness. Heat can be provided for comfort or for healing under strict regulation and without danger. We indicate in the accompanying figures some of the "Calora" Electro-Thermophores which are likely to be of special interest to our readers.[1]

THE "VERNOL" HAY-FEVER OUTFIT.

At this time of the year many patients in sanatoria and undergoing open-air treatment suffer much discomfort from hay fever. Messrs. Allen and Hanburys, Ltd., have introduced a number of preparations

THE "VERNOL" HAY-FEVER OUTFIT.

and appliances for the relief of these cases. Notice should here be directed to the "VERNOL" HAY-FEVER OUTFIT. This comprises a bottle of Compound Menthol Nasal Tablets, a Glass Nasal Douche,

[1] Full particulars regarding "Calora" preparations, together with an illustrated booklet showing the various ways in which they may be employed, may be obtained on application to Messrs. M. E. Du Bois and Co., 1, Guildhall Chambers, 31-34, Basinghall Street, E.C. 2.

and a tube of "Vernol." "Vernol" is a soothing and astringent salve, containing adrenin (1 in 5,000) with anæsthesin (1 in 40). The salve is contained in a collapsible tube, with a long nozzle, providing for the convenient insertion into the nostril.[1]

TOBACCO FOR THE TUBERCULOUS.

Large numbers of consumptives and other tuberculous subjects are smokers, and in many instances complete withdrawal of all forms of tobacco produces serious physical discomfort and mental distress. There are not a few delicate and constitutionally feeble people who, if they are to smoke at all, must be advised to select their tobacco with care. In the case of cigarette lovers it is essential that a wise choice should be made. The old-established firm of Martins, Ltd., offer a special brand of "NON-THROAT" CIGARETTES.[2] They are prepared from a special blend of tobacco, and are out-of-the-ordinary in flavour and general character. Unusually mild and free from the "bite" met with in so many cigarettes, they can be used with pleasure by persons with sensitive throats and unable to indulge in ordinary smokes.

THERAPEUTIC AND HYGIENIC PREPARATIONS.

PHENALGIN is a valuable preparation for use in sanatorium and general service.[3] It is an analgesic, antipyretic and general sedative, and in dealing with rheumatic and neuritic pains, painful menstruation, cephalalgia, certain forms of cough, restlessness and other minor ailments so common in tuberculous subjects, it will be found of much value.

JACKSON'S MOTOR-CAR POLISH is a preparation which doctors and others will find serviceable in the preservation of their motor-cars. It is also an excellent application for use in hospitals and sanatoria as well as in private houses. The polish not only gives a brilliant and lasting lustre to woodwork and leather, but protects surfaces from the deteriorating action of mud, rain, damp, and sun.[4]

"FORMIC" SOCKS are a hygienic novelty which will appeal to many. They should be of much service to patients undergoing open-air treatment, as well as to ordinary healthy persons who realize the importance of a wise care of the feet in preserving the general health. The "Formic" socks are impregnated with formol, and would seem likely to be of special advantage to those troubled with sweating feet. They go far to keep the feet cool in summer and warm in winter, and can be obtained in all sizes.[5]

[1] The "Vernol" Hay-Fever Outfit can be obtained complete for 4s. 6d. from Allen and Hanburys, Ltd., 7, Vere Street, Cavendish Square, W. 1., and 37, Lombard Street, E.C. 3.

[2] Full particulars regarding the "Non-Throat" Cigarettes can be obtained from Martins, Ltd., 210, Piccadilly, W. 1.

[3] Particulars and specimens of Phenalgin will be sent to medical practitioners on application to the manufacturers, Messrs. E. T. Pearson and Co., Ltd., London Road, Mitcham, Surrey.

[4] Particulars regarding "Jackson's Motor-Car Polish" can be obtained from the manufacturers, Messrs. Brown Brothers, Ltd., Brown's Buildings, Great Eastern Street, E.C. 2.

[5] Particulars regarding the "Formic" Socks can be obtained from the makers, the Medicated Sock Co., 56, Warwick Street, W. 1.

THE OUTLOOK.

"THE BRITISH JOURNAL OF TUBERCULOSIS."

THIS journal, since its foundation nearly fourteen years ago, at the beginning of 1907, has been issued at the nominal annual subscription rate of five shillings, post free to all parts of the world. Throughout the testing years of war and during the difficult period of after-war reconstruction no change has been made in the price of the journal. The publishers had hoped that with the coming of peace and a return to healthy productiveness it would have been possible to continue without any alteration. We are compelled, however, to admit that we have planned and striven and hoped in vain. The enormous increase in the price of paper, the still soaring costs in production and all materials essential for the carrying on of the journal, make it impossible to carry on any longer at the old rate. From now onwards the annual subscription will be ten shillings, post free. The increased rate will apply henceforth to all new subscribers, but existing subscribers will continue at the old rate until the end of their current subscription. We are convinced that our subscribers will appreciate the efforts we have made to resist what is now recognized as inevitable. We have delayed making any alteration as long as was possible, and now we rely on the loyalty and continued sympathy and support of all our readers, and trust that the same will be evidenced, not only by an absence of all withdrawals, but by a practical endeavour to extend considerably the circulation of the journal throughout the British Empire.

THE TUBERCULOSIS SOCIETY'S CONFERENCE AT LEEDS.

Through the courtesy of Dr. F. J. C. Blackmore, the Hon. Secretary of the Tuberculosis Society, 39, Woodland Terrace, Old Charlton, S.E. 7, and Dr. H. A. Ellis, we have been favoured with the following record of the recent Tuberculosis Congress at Leeds: "The Conference of the Tuberculosis Society, held at Leeds during Health Week, was a most satisfactory sign of the progress which is being made in matters tuberculous. Dr. H. de Carle Woodcock, in his opening address, emphasized the point that this world would not be worth living in were there not a little bit of Heaven in it, and proceeded to show how the little bit could be increased. The Conference made a happy departure by calling attention by resolution to the need for co-ordination between the objective of the Research Workers and that of the Tuberculosis Officers. It appears remarkable that such a self-evident proposition has not been carried out long ago. The afternoon session was satisfactorily divided into sections. In the main medical section papers were given by Sir Henry Gauvain, Dr. Marcus Paterson, and Dr. H. A. Ellis, who dealt with recent advances. The following afternoon this section was devoted to a most valuable and instructive discussion on Pneumothorax, in which the two schools came into

valuable juxtaposition, Dr. de Carle Woodcock Dr. Vere Pearson, and Dr. Morriston Davies taking prominent part. Later Dr. Woodcock, at the Armley Sanatorium, demonstrated on some half-dozen cases the ease and safety of the procedure with his more simplified apparatus. The value of sectional discussion whereby medical and lay problems were kept apart, although diminishing the attendance to each section, amply maintained the interest. There were four divisions maintained throughout. At Harrogate there was possibly the most interesting general meeting of the whole Congress held on the Saturday, when, after inspecting the baths, the conference assembled and listened to a most interesting and original address by Professor Benjamin Moore (Research Council) on the relation of ozone and nitrogen peroxide to the development of plants and the increase of stamina produced by sunlight. This brought a very successful Conference to a conclusion, and again the final speeches emphasized the great importance of co-ordination. A very great deal of the success of the Congress was due to the Hon. Secretaries, Dr. Blackmore, T.M.O., Woolwich, and Miss Powell, Secretary of the Tuberculosis Department at Leeds, and they both must be very gratified at the result of their efforts." We congratulate the Tuberculosis Society on their enterprise and scientific spirit in inaugurating and carrying through so successful a gathering of tuberculosis officers and others interested in the study of measures for the prevention and arrest of tuberculosis. We venture to suggest that provincial meetings might be arranged with advantage in many other centres.

KING GEORGE'S SANATORIUM FOR SAILORS.

Lord Inchcape has given his whole-hearted support to a project to provide a sanatorium for sailors suffering from tuberculosis. For many years about thirty tuberculous mariners have been maintained on a top floor and roof of the Seamen's Hospital at Greenwich, and it is now proposed that these patients shall be removed into the country. There are a large number of sailors now suffering from tuberculosis, and it is hoped to make a beginning with one hundred beds. A site of one hundred acres has been selected near Liphook, in Hants, where there is a large house which will provide sufficient accommodation for the staff, as well as recreation and dining rooms. The scheme has been approved by the Ministry of Health, and plans are being prepared by Messrs. Colcutt and Hamp, 20, Red Lion Square, Bloomsbury. There will be erected, in the first instance, one double-storied pavilion containing eighty beds with verandahs; the wards will be largely single-bedded; the plans and general arrangements conforming closely to those set forth in the "memorandum on provision of new residential institutions for the treatment of pulmonary tuberculosis," issued by the Local Government Board and adopted, with amendments, by the Ministry of Health. There will be set up in connection with the sanatorium a pathological research laboratory, and patients will be instructed in gardening and other healthy occupations. The institution will be controlled by the Seamen's Hospital Society, and His Majesty has commanded that it shall be known as King George's Sanatorium for Sailors. At present the sailor has difficulty in obtaining admission to existing sanatoria, principally because he can so seldom show domicile:

it is, however, hoped that this and other disabilities may be amended in the new Bill removing sanatoria benefits from the insurance committees. Lord Inchcape is raising a fund to defray the cost of treatment, over and above the grant which will be received for each patient from the Ministry of Health, and already £65,000 has been raised. We owe much to our sailors, and especially to those who are now suffering from the consequences of abnormal conditions, many hardships and much exposure experienced during the war. Further particulars may be obtained on application to the Seamen's Hospital at Greenwich, and donations can be forwarded to Commander Hodgkinson, R.N., Hon. Treasurer of the Fund, at 122, Leadenhall Street, E.C. 3.

NOTES AND RECORDS.

The National Association for the Prevention of Tuberculosis have accepted an invitation from the City of Liverpool to hold its Eighth Annual Conference in St. George's Hall, Liverpool, on October 7–9. The following subjects are to be discussed: (1) Review of methods of treatment advocated from time to time, the extent to which they have been followed, and the results obtained. (2) Practical difficulties in connection with the carrying out of tuberculosis schemes. (3) Milk as a source of infection and its preventive control. Authorities from all parts of the United Kingdom, America, and the Continent will take part. The City of Liverpool affords many special advantages for the purposes of the conference. The following will be open for inspection: Delamere Sanatorium; Fazakerley Sanatorium; Royal Liverpool Country Hospital for Children, Heswall; Liverpool Children's Hospital, Leasowe; New City Laboratories; Port Sunlight; and many examples of recent developments in housing. No conference fee is required. It is hoped that Public Health Authorities and other bodies interested in the subject of tuberculosis will appoint delegates, whose names should be sent without delay to the Hon. Secretary, National Association for the Prevention of Tuberculosis, 20, Hanover Square, W. 1.

The Mount Vernon Hospital for Tuberculosis and Diseases of the Lungs and Heart is now enlarging the scope of its work, and is arranging to take all types of cases suffering from tuberculosis. Plans have been prepared for a new block. On Thursday, July 8, H.R.H. the Princess Beatrice will open a Garden Fête in the Hospital Grounds at Northwood in aid of the Fund to provide Additional Beds for Tuberculous Children. All interested in this new development for dealing with sufferers from tuberculosis are invited to be present.[1]

The British Red Cross Society and Order of St. John War and Peace Hospital Library are now arranging to extend the service to hospitals in the United Kingdom. Sanatoria and other centres dealing with tuberculous cases are to be included. We hope it may be possible to arrange for suitable books to be sent to children in residential sanatoria and open-air schools. An appeal is being made for books to support this worthy scheme.[2]

[1] Tickets and all particulars may be obtained from the Secretary, Mr. W. J. Morton, at the London offices, 7, Fitzroy Square, W. 1.

[2] Full particulars regarding the British Red Cross Society and Order of St. John War and Peace Hospital Library on application to Headquarters at 48, Queen's Gardens, Lancaster Gate, W. 2.

The Boston Association for the Relief and Control of Tuberculosis in the recently issued Sixteenth Report, present several instructive illustrations indicating occupational therapy as carried out in the Boston Consumptives Hospital. Dr. George D. Porter, the Secretary of the Canadian Association for the Prevention of Tuberculosis, the headquarters of which are at Ottawa, furnishes an enlightening account of "Modern Educational Methods in Health Work."[1]

Cremation is a subject which should receive the serious consideration of all medical advisers, and particularly those who are called to deal with the subjects of such a disease as tuberculosis. Much attention is being devoted to means seeking the destruction of the tubercle bacillus and the blocking of all channels of infection, but it is rare to find any reference made to the advantages of cremation. Not infrequently consumptive patients express a desire for cremation, and such is often based on hygienic and altruistic grounds, as well as for æsthetic and sentimental reasons. All interested in the extension of cremation as a sanitary and generally desirable form of disposal of the dead should consult the publications of the Cremation Society of England.[2]

Archivos Españoles De Tisiologia, edited by Dr. Luis Saye, of Barcelona, is a new journal which students of tuberculosis will welcome.[3] The second number has just reached us. It is admirably got up, splendidly printed, lavishly illustrated, and contains articles of high merit. Among them are the following: "La Formula Leucocitaria de la Tuberculosis," by F. Junénez Asúa; "Reacciones cromogenas en la orina de los tuberculosos," by T. Seix; "Caso rarisimo de soplo venoso probablemente de la Azigos mayor, en un enfermo de tuberculosis pulmonar," by M. Darden Rodés, and "Contribucion al estudio de las Imagenes Radiograficas de las Tuberculosis caseosas primitivas del Pulmon," and "Comprobacion anatomica en un caso de imagen radiografica cavitaria anomala," by L. Saye, and "Tuberculosis ganglio-pulmonar en la infancia," by E. Suñer Ordóñez and García del Diestro. There is also a sketch with protrait of René J. Theophile Hyacinte Laennec. The journal contains abstracts and an excellent bibliography. We wish particularly to direct attention to the very fine series of instructive radiograms of tuberculous lungs; they are the best we have ever seen.

We are glad to welcome the new *Journal of Neurology and Psychopathology*, which makes a start full of promise.[4] It is issued under a

[1] "The Sixteenth Annual Report of the Boston Association for the Relief and Control of Tuberculosis," is issued from the Central Office, 3, Joy Street, Boston, Massachusetts, U.S.A.

[2] The offices of the Cremation Society of England are at 52, New Cavendish Street, W. 1, and medical officers of health, tuberculous officers and medical advisers generally may obtain full particulars on application. "The Transactions of the Cremation Society of England" are issued periodically to subscribers. (Price to non-subscribers, 1s. net.)

[3] *Archivos Españoles De Tisiologia.* Publicados: Por el Dr. Luis Saye (Barcelona), con la colaboración de los doctores Cerdeiras (Montevideo), Dargallo (Barcelona), Garcia Del Real (Valladolid), Gil y Casares (Santiago de Galicia), Gutiérrez Gamero (Madrid), Lozano (Zaragoza), Más y Magro (Alicante), Reventós (Barcelona), y Verdes Montenegro (Madrid). (Se publican tres números al año: Enero, Mayo y Septiembre. Suscripcion annal, 25 pesetas). Barcelona: Redaccion; Calle de Aragon, núm 282; Administración: Sdad. Gral. Publicaciones, Deputación, 211.

[4] The *Journal of Neurology and Psychopathology* is issued quarterly under the direction of the following Editorial Committee: Drs. S. A. Kinnier Wilson,

representative Editorial Committee, and the publishers have provided good paper, clear type, illustrations, and an attractive format. The articles are excellent, and the signed abstracts are a special feature. The journal is one which should interest all types of medical practitioners.

The International Journal of Public Health, published under the auspices of the League of Red Cross Societies, deserves an enthusiastic welcome.[1] It deals with all phases of public health and preventive medicine. The first number opens with an illuminating article by Professor A. Calmette on "The Protection of Mankind against Tuberculosis." There is a long and important paper by Dr. Richard P. Strong on "The Anti-Typhus Campaign in 1915 in Serbia considered in Connection with the Present Typhus Epidemic in Poland." A fine outlook is afforded in Professor George C. Whipple's communication on "World Sanitation: A Twentieth Century Possibility." A section is devoted to Reviews and Abstracts, and here there is a serviceable summary on the "Influence of the War on Tuberculosis." The journal is admirably got up.

The official *Bulletin of the League of Red Cross Societies*, published at Geneva, in its issue for May (Vol. I., No. 10), contains an instructive article on "Anti-Tuberculosis Measures in Switzerland."

The publications issued from the Trudean Sanatorium are always of exceptional interest. With the last report appear the Studies of the Edward L. Trudean Foundation.[2] These include the following: "A Study of the Effects of Typhoid Fever and Anti-Typhoid Immunization on Pulmonary Tuberculosis," by Drs. Lawrason Brown, F. H. Heise, S. A. Petroff, and G. E. Wilson; "A Study in Fundamentals of the Nutrition of the Tubercle Bacillus," by E. R. Long; "The Differentiation of Early Tuberculosis and Hyperthyroidism by Means of the Adrenalin Test," by N. C. Nicholson and E. Goetsch; "The Early Roentgen Diagnosis of Ulcerative Tuberculous Colitis," by Lawrason Brown and Homer L. Sampson; "The Influence of Anæsthesia on Experimental Tuberculosis in Guinea-Pigs," by Lawrason Brown and S. A. Petroff; "Etiological Studies in Tuberculosis," by Lawrason Brown, S. A. Petroff, and Gilberto Pesquera; and "Serological Studies in Tuberculosis," by S. A. Petroff.

T. Graham Brown, R. M. Stewart, Bernard Hart, Henry Devine, Maurice Nicoll, and Carey F. Coombs. The publishers are John Wright and Sons, Ltd. The annual subscription is 30s. Single numbers, 8s. 6d. net.

[1] *The International Journal of Public Health* is published by the Department of Medical Information, General Medical Department of the League of Red Cross Societies. The editor is Dr. Thomas R. Brown, assisted by a representative editorial staff. The journal is to be issued every two months, and will appear in four editions—English, French, Italian and Spanish—each containing the same material. The first three numbers will be distributed gratis in all parts of the world to organizations and individuals actively interested in public health. With the beginning of January, 1921, the subscription rate will be 20s., 5 dollars, 25 francs or lire, or the approximate normal equivalent in the currency of the country of the subscriber. The Department of the League will be glad to furnish information on tuberculosis and other questions relating to public health and preventive medicine. All communications should be addressed to the League of Red Cross Societies, Geneva, Switzerland.

[2] The Thirty-Fifth Annual Medical Report of the Trudean Sanatorium and the Fifteenth Medical Supplement for the year ending October 31, 1919, together with the Studies of the Edward L. Trudean Foundation for Research and Teaching in Tuberculosis.